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THE BLOOD–LETTING CONTROVERSY: A STUDY IN THE SCIENTIFIC METHOD *

LESTER S. KING

In the 1850's Scottish medical circles witnessed a bitter struggle of much more than local interest. The antagonists represented the old and the new. On the one hand was William Pultney Alison (1790-1859), grandson of the great John Gregory, nephew of the equally renowned James Gregory, and thus the intellectual descendant of William Cullen. As professor of the Practice of Physic at Edinburgh since 1842, he was the unquestioned head of the Scottish medical profession, but he belonged to the older tradition.

His opponent, John Hughes Bennett (1812-1875), represented the younger generation. Graduated from Edinburgh in 1837, he spent the next four crucial years studying in Paris and Berlin where the newer investigative spirit flourished. Returning to Edinburgh in 1841, he immediately began to teach in the newer tradition, stressed the microscopic study of tissues, and worked as a pathologist as well as a clinician. He was sceptical and critical, which may be virtues; but he was also sarcastic, often condemnatory and antagonistic, traits quite undesirable in one who wishes to introduce new theories and practices. In his controversy with

* Read at the thirty-third annual meeting of the American Association for the History of Medicine, Charleston, S. C., March 24, 1960.

Dr. Alison the entire Edinburgh medical society sided with the older man, while Bennett had to carry his banner all alone, in solitary opposition.

Bennett was a popular lecturer. On November 6, 1855, he delivered to the medical students an introductory lecture later published as a separate pamphlet, *The Present State of the Theory and Practice of Medicine.*[1] This touched off a tremendous storm, but if we try to find out just why, the reasons are by no means obvious. For the most part he discussed general methods and principles of science, what we might today call the elementary philosophy of science. He went on to discuss the inter-relations of theory and practice and indicated how new theory had led to improved practice. Many of his illustrations were non-medical, but he did refer to pneumonia and its treatment through blood-letting. Bennett indicated that the recent discoveries in pathology, and newer diagnostic techniques, had shown blood-letting to be quite useless. He declared, " Pneumonia consists of an exudation into the vesicles and tissues of the lung, which coagulates and excludes the air. It is doubtful whether a large bleeding from the arm can operate upon the stagnant blood in the pulmonary capillaries—that it can directly affect the coagulated exudation is impossible." [2] Instead, bleeding merely lowered the " strength and vital powers " of the individual.

As a matter of fact, the actual practice of blood-letting had diminished somewhat in popularity and, by 1855, was not pursued as vigorously as it had been a generation before. Coincident with this lessened popularity, the pneumonia mortality rates had also diminished. Bennett expressed the opinion that the improved mortality figure was due to the changed method of treatment, that is, to the decline of extensive blood-letting. He briefly denied a different claim, that the disease itself had changed over the past two generations and that the improved mortality figures resulted from this change.

This brief reference to a previous paper by Dr. Alison,[3] a reference which in cold print over a century later seems so innocuous, raised a tremendous storm. At a meeting of the Medical-Chirurgical Society of Edinburgh (February 20, 1856), Dr. Alison, universally admired and beloved, to explain his own viewpoint read a paper entitled, " Reflections

[1] J. H. Bennett: *The Present State of the Theory and Practice of Medicine. An Introductory Lecture to the Class of the Institutes of Medicine in the University of Edinburgh.* Delivered November 6, 1855. Second edition, Edinburgh and London: Sutherland & Knox, 1855.

[2] *Ibid.*, p. 18.

[3] W. P. Alison: Cases illustrating the asthenic forms of internal inflammation now common in this country. *Monthly J. M. Sc.*, 1852, *15*: 493-507.

on the results of experience as to the symptoms of internal inflammations, and the effects of blood-letting, during the last forty years." [4] At this meeting Dr. Bennett was not present.

The discussion following the paper illustrated the medical politics and medical attitudes of the times. One discussant, Dr. Alexander Wood, deplored ". . . the injurious influences which the crude and rash theories of Dr. Bennett must necessarily exercise on the Edinburgh School of Medicine, in which he holds office as a teacher." He criticized Bennett and, noting the latter's absence, declared with scorn that the author, " shrank from undertaking his defense in a Society where he must contend with his equals." The lecture platform before students is, Wood declared, not ". . . a wise place to initiate such sweeping novelties in practical medicine." It would have been fitter if Dr. Bennett had promulgated his views before the Society. Since Dr. Bennett had not been present, Wood declared, " Surely it argues a want of confidence in the truth of his opinions, akin to cowardice, for a man to teach such crude and undigested theories to his students, and yet to decline to defend them when impugned by an authority so distinguished as Dr. Alison, and to avoid the discussion of them by those who are qualified by personal experience for the task." Other discussants at this meeting made remarks of similar tenor.[5]

Bennett loved a fight. He wrote the editor of the Edinburgh Medical Journal objecting to the censure and declared he chose to " keep aloof " from any discussions wherein Dr. Wood and his friends took such a prominent part. Throwing a few barbs of his own, he admitted it was indeed regrettable " that the Society is not attended by those who are best qualified to enter into medical discussions. But the reason will be apparent . . . Sound professional knowledge and experience must be expected to depart from a Society when personal invectives and empty declamation are honored guests." [6]

These mutual recriminations indicate the passions involved, and the strong emotional background which necessarily influenced the intellectual judgments. When Edinburgh had been the leading medical center in the world, William Cullen was its leading physician. Cullen and the Gregories had represented the same tradition, the true Golden Age of Scottish

[4] W. P. Alison: Reflections on the results of experience as to the symptoms of internal inflammations and the effects of blood-letting, during the last forty years. *Edinburgh M. J.*, 1856, *1*: 769-788.

[5] Society Transactions Medico-Chirurgical Society of Edinburgh, *ibid.*, pp. 947-953, (p. 948).

[6] Letter to the Editor, *ibid.*, pp. 1054-55.

medicine. The older physicians practicing in mid-nineteenth century Edinburgh had trained with James Gregory or directly under his influence. But now the new scientific advances on the continent had somewhat dimmed the luster of this great tradition. Bennett was a relative newcomer, who, although a native son, had largely trained in a different and foreign tradition. When he attacked the practices favored by Cullen and Gregory, he was, so to speak, attacking the national pride of Scotland. The resentment against Bennett was probably in part due to strong nationalism.

II

To understand the controversy we must appreciate the confusions which at that time attended the concept of inflammation. Was inflammation a disease, or was it the symptom of a disease? Was it a local state, or was it a systemic condition? Or was it both? Today, when we know so much about specific infectious agents, and can distinguish septic from aseptic inflammations, our ideas are much clearer, but in 1850 all was not so clear. We may illustrate the confusion by a brief case reference.

James Wardrop, a prominent nineteenth century British surgeon, described a man who suffered a severe twisting injury to his knee, which became hot, painful, and swollen. The patient was in shock, and local treatment to the knee did not bring improvement. The doctor felt " that unless the most energetic means were at once adopted *to prevent the accession of inflammation*," the patient's life, to say nothing of his leg, might be in danger.[7] We would think that the heat, swelling, redness, and pain, already noticeable in the knee, indicated that inflammation had already occurred. But Wardrop used the term in a different sense, to indicate a general systemic reaction, of febrile character, quite different from the local changes in the knee.

Similiarly when Alison used the term inflammation he did so sometimes in one sense, sometimes in another. He was not aware of the very many and quite specific infections each of which could induce some degree of inflammation, and which, in the aggregate, should be distinguished from the aseptic forms. To a great extent in 1850 " inflammation " was the night in which all cats are black.

Nevertheless, however they conceived of inflammations, up to the middle of the nineteenth century physicians had what they thought was

[7] James Wardrop: *On Blood-letting. An Account of the Curative Effects of the Abstraction of Blood; With Rules for Employing both Local and General Blood-letting in the Treatment of Diseases.* London: J. B. Baillière, 1835, p. 95. (Italics not in text)

a very effective remedy against this condition. Blood-letting was the mainstay of the so-called antiphlogistic regime, the chief remedy against inflammation and certain types of fever. Blood-letting, however, was considered undesirable or even contraindicated when the patient exhibited an "asthenic" or a "typhus" state.

Although under the influence of Louis [8] a reaction against blood-letting began to gather force, nevertheless the classical doctrines still remained influential. Wardrop insisted that if a patient had an "incompressible" pulse, this was "pathognomonic" of inflammation, and the patient should be bled. And how much blood should be withdrawn? As much as the patient can bear until the hard incompressible pulse changes to a soft quality. This was supposed to "subdue" the inflammation, and a single initial bleeding of forty ounces might be necessary. It was considered especially important to let blood during the early stages of disease, before the *overt* signs of "inflammation" were recognizable. That is, he recommended blood-letting when the disease was still larval, and symptoms not yet fully developed.[9]

Clutterbuck, in 1839 recommended blood-letting, but could give no very sound rationale. He declared that we do not know how medicinal agents act, and must place "our chief reliance on observation and experience, as the only guide that can be safely and implicitly followed." [10] Of phlebotomy, the "good effects, when properly administered, are, in most cases, so immediate and striking as not to be mistaken." [11] As Descartes might have said, a "clear and distinct idea" is its own guarantee of truth. Clutterbuck believed venesections acted not directly on the disease, "but rather by a kind of counter-impression on the system, by which the disease is influenced in a secondary way." [12] It was a non-specific shock to the system, like a cold bath, extreme pain, alcohol, or violent emotion, and made a "powerful impression" on the system, comparable to purging, vomiting, sweating, or drugs such as antimony or mercury.

Clutterbuck was a pure empiricist who could not give specific reasons why the treatment should work. He explicitly stated that blood-letting

[8] P. C. A. Louis: a) Recherches sur les effets de la saignée dans plusieurs maladies inflammatoires. *Arch. gén. de méd.*, 1828, *18*: 321-336. b) *Researches on the Effects of Blood-letting in some Inflammatory Diseases, and on the Influence of Tartarized Antimony and Vesication in Pneumonitis.* Translated by C. G. Putnam, with preface and appendix by James Jackson. Boston: Hilliard, Gray & Co., 1836.

[9] James Wardrop: *Lancet*, 1833-4, *1*: 577-583. Also footnote 7 above, pp. 50-65.

[10] Henry Clutterbuck: *Lectures on Blood-letting, Delivered at the General Dispensary, Aldersgate Street.* Philadelphia: Haswell, 1839, p. 27.

[11] *Ibid.*, p. 6.

[12] *Ibid.*, p. 12.

accomplishes a very wide variety of purposes in different circumstances, and that often contradictory effects are produced at different times. No definite rules could be given. Blood-letting could not be reduced to any science, and "hence the uncertainty of our art." [13] In other words, here we have therapeutics without sound rationale, that is, complete bankruptcy of theory. Yet since experience has shown that blood-letting works, Clutterbuck insisted that we must retain the practice.

III

Let us examine some aspects of the dispute between Alison and Bennett. In his original article in 1852 Alison made several very significant points. There was the basic presupposition that blood-letting was valuable. He followed Cullen and the older writers, that for a "phlogistic diathesis," with a strong pulse and difficult respiration, blood-letting was effective and desirable. Cullen, describing pneumonia, had stressed the difficulty in breathing and the state of the pulse, usually "full, strong, hard and quick." [14] For disease of this type blood-letting was recommended by all the older authors, and Alison maintained the justness of this view. But, he continued, there were now seen many cases of "internal inflammation," of lungs (and other organs) wherein the breathing was not too severely affected, where the pulse was soft and weak, and the patient exhibited an "adynamic" or "typhoid" appearance. These cases could be called asthenic fevers with inflammations. Cases of pneumonia which had "a soft frequent pulse" and a "typhoid affection of the nervous system," were definitely not the same pneumonia that Cullen had discussed, but should be considered an "unequivocal typhus fever, complicated with pneumonic symptoms." [15] Clearly, for such cases blood-letting was not desirable.

Alison made the point that the newer diagnostic methods—percussion and auscultation, not available to Cullen and the Gregories,—could identify many cases of lung inflammation which must certainly be called pneumonia, but which differed from what Cullen described under that term. For many of these newer cases, which might formerly have been called catarrh, blood-letting was clearly undesirable. But this did not in any way detract from the value of blood-letting in the cases that Cullen had described. In other words, more and more cases were being recog-

[13] *Ibid.*, p. 50.

[14] William Cullen: *First Lines of the Practice of Physic.* Four vols., Edinburgh: Elliot and Cadell, vol. I, pp. 363-364 (pars. 335-336).

[15] W. P. Alison, footnote 3, above.

nized as pneumonia, but they were of different character. For the past many years, he declared, the classical Cullen-type of pneumonia with its "phlogistic diathesis" was much less prevalent than it had been twenty to forty years before. The type of pneumonia seemed to be changing.

Alison insisted that treatment should be regulated by the "vital indications." Physicians should attend to the pulse and respiration, and the vital signs, employ bleeding where the phlogistic diathesis was present, but avoid it where the patient showed a typhoid state.

This, in brief, was Alison's viewpoint in 1852, expressed in a very murky style which often obscured his meaning within a jungle of subordinate clauses. When Bennett, in 1855, lectured to the medical students, he made, as we have seen, only a passing reference to this paper. Nevertheless his few words completely contradicted the venerable and beloved Alison. In 1856 [16] Alison, in the most courtly and gentlemanly fashion, repeated and elaborated his previous viewpoint. Bennett, he declared, had denied to the medical students that blood-letting had "power" over inflammation, a doctrine which the older physicians had drawn from experience of observation of disease. Alison, in a well-reasoned paper, maintained his previous position. This was the meeting where Bennett's failure to attend provoked such pointed gibes.

But Bennett had his chances for rebuttal. At a later meeting he expounded his own viewpoint.[17] He denied that much reliance could be placed on the experience of Cullen or Gregory, because these doctors had no real knowledge of internal inflammation but were dealing only with symptoms. Bennett thus was depending entirely on pathology, on the "scientific" criteria for inflammation. He claimed, therefore, that inflammation did not change. It logically followed that blood-letting, and all of the old "antiphlogistic regime," was quite opposed to a sound modern pathology. Inflammation once established could not be cut short by blood-letting. He adduced very abundant data and argument and various statistics to indicate that blood-letting was not beneficial in pneumonia.

IV

The controversy between Bennett and the rest of the Edinburgh Medical Society was very prolonged. The papers, verbal discussions, and letters,

[16] W. P. Alison, footnote 4, above.

[17] J. H. Bennett: Observations on the results of an advanced diagnosis and pathology applied to the management of internal inflammations, compared with the effects of a former antiphlogistic treatment, and especially of blood-letting. *Edinburgh M. J.*, 1857, *2*:769-796.

occupied many many pages in the *Journal*,[18] and it would be fruitless to detail all the assertions, counter-assertions, contradictions, claims, and counter-claims. However, through the entire argument there are certain sharp points of issue whose consideration is profitable.

In the first place we can ask, What is inflammation? Bennett's answer derived from microscopic studies of inflamed tissue. Inflammation was the "change . . . characterized by exudation of lymph through the walls of the minute vessels, resulting from changes more or less well marked in the nervous, vascular, sanguineous and parenchymatous elements of that part."[19] In pneumonia the exudate coagulated in the lung "vesicles" and thus excluded the air. Eventually, as the disease ran its course, the solid mass was converted into a fluid crowded with pus cells, and was absorbed into the blood.

Bennett had no difficulty showing that blood-letting could not change this course of events. As the microscopic study of inflammation progressed (and we must remember that in 1855 it had not progressed very far), the clearer it became that venesection could not influence the cellular sequences. Instead, "lowering the strength and vital power of the individual is directly opposed to the necessary vital changes, which the exudation must undergo, in order to be removed by cell-growth and disintegration."[20] Blood-letting could derive support neither from concrete observation nor theoretical considerations. At first glance, therefore, Bennett's arguments seem very cogent, and entirely modern.

But when Alison in rebuttal talked about inflammation, he meant something quite different from what Bennett had in mind. For Alison inflammation was not simply the passage of blood constituents from one locus to another, not "merely the mechanical change of position of many particles of the blood."[21] The exudation was only one small facet in a *total process*, whose vital (not mechanical) nature included not only overt anatomic changes, but the *tendency* to such changes. Exudation may indeed be the essence of inflammation, but in modern terminology we

[18] a) Transactions of the Medico-Chirurgical Society of Edinburgh. *Edinburgh M. J.*, 1856, *1*:947-953; 1857, *2*:1034-1040; 1044-1052. b) Thomas Watson: Note to the lecture on blood-letting, formerly published. *Ibid.*, 1857, *2*:1084-1088. c) J. H. Bennett: Reply to the previous note of Dr. Watson. *Ibid.*, pp. 1088-1091. d) Letters to the editor. *Ibid.*, 1857, *3*:184-188. e) W. F. Gairdner: Remarks on Dr. Bennett's paper on blood-letting and antiphlogistic treatment. *Ibid.*, pp. 197-229. f) J. H. Bennett: Reply to the foregoing "Remarks" of Dr. Gairdner. *Ibid.*, pp. 228-232.

[19] J. H. Bennett, footnote 17 above.

[20] J. H. Bennett, footnote 1 above, pp. 18-19.

[21] W. P. Alison, footnote 4 above.

cannot say that therefore inflammation is *nothing but* exudation. What else inflammation included, besides exudation, he did not clearly describe, using only such vague terms as "vital action." Nevertheless, to omit this vague penumbra in favor of one single group of concrete phenomena, Alison considered fallacious.

To paraphrase Alison we might say that measles, for example, is not "only" a cutaneous eruption but represents a definite process with a long time-span. In the prodromal stage before the eruption, the patient is already suffering from measles, and before the rash appears there is already a "tendency" to that eruption. The eruption is "*in posse*" rather than "*in esse*" and exists *potentially* in the earlier phase. Once the eruption has appeared, nothing can cut it short. But it is quite plausible that appropriate treatment, *in the earlier state*, could affect the rash which has not yet appeared. If we correctly interpret Alison's somewhat vague remarks he apparently thought of inflammation in similar fashion.

It is clear that Bennett and Alison were not talking about the same thing. For Bennett inflammation consisted of certain phenomena which could be observed under the microscope. For Alison, who was not a microscopist, inflammation was a disease in its own right, showing a whole course of development.

If we adopt Alison's viewpoints, his teachings are not unreasonable. He granted freely Bennett's contention that blood-letting could not affect the exudation and consolidation when fully developed. But Alison maintained that blood-letting might affect the *process*, the *tendency*, the *potentialities*, so to speak, in the stages before the exudation. If we regard inflammation as a total process, then there would be a stage when anatomical changes were relatively insignificant. Blood-letting might terminate, modify, or cut short the total process, before the exudation took place or before any tissue injury had occurred. In brief, blood-letting might cut short a *disease* (which he called "inflammation") although it could not cut short the fully developed exudate (which Bennett called "inflammation").

Cullen and Gregory had diagnosed pneumonia on the basis of clinical symptoms alone. Now, Bennett pointed out that symptoms were quite inadequate to identify pulmonary inflammation, nor could symptoms alone discriminate sufficiently between pneumonia, bronchitis, and "apoplexy of the lung" associated with fever or heart disease.[22] Cullen and Gregory, not knowing auscultation and percussion, relied on observations which

[22] J. H. Bennett, footnote 17 above.

to later generations seemed quite superficial. Undoubtedly, as Bennett pointed out, earlier authors diagnosed as pneumonia many cases that were not, and conversely also failed to detect many cases that were.

Quite impatient with the older methods, Bennett declared that our guide should not be what the old writers had said, but rather it is "the book of nature" which we ought to study. He went on, ". . . and why should we read it [the book of nature] through the eyes of the sages of former times—when the light of science was comparatively feeble and imperfect—instead of bringing all the advanced knowledge of the present time, to elucidate her meaning." [23] He maintained that we must reinvestigate, with improved modern appliances, the correctness or incorrectness of existing dogmas, in order to establish an improved practice for the future.

All this sounds quite modern and enlightened. Bennett presented statistics to prove that pneumonia treated by blood-letting gave results much worse than cases not so treated. He pointed out that young and vigorous patients, suffering from pneumonia, would get well by themselves. Furthermore many circulatory and congestive disorders of the lungs were mistakenly diagnosed as pneumonia. In these, blood-letting would be helpful, but the benefit thereby induced was mistakenly credited to pneumonia therapy.

While these arguments might sound very crushing, Alison made a cogent rejoinder. He denied that the pneumonia which Bennett discussed and which yielded such a fine statistical cure-rate, was the same disease as Cullen and Gregory described. Alison agreed that with improved methods of diagnosis many cases with pulmonary exudations now called pneumonia would not previously have been so diagnosed, and many of these would get well without treatment. To include these cases in statistics on blood-letting would greatly improve the mortality rates. But this does not have much bearing on the question whether, *in the cases that Cullen saw and treated*, blood-letting was beneficial. Alison declared that Bennett had fallen into the "fallacy of statistics." [24]

In brief, Alison was pleading for recognition of the "clinical entity." Cullen and Gregory had, through empirical observation, set up a clinical entity, a definite pattern, with a definite course and a clear-cut response to therapy. Various new diagnostic procedures can label many new cases as pneumonia, but these are not necessarily the same as Cullen and Gregory

[23] *Ibid.*
[24] W. P. Alison, footnote 4 above.

observed. It must be *demonstrated* that these new cases diagnosed through auscultation are actually the same clinical entity, and this Bennett failed to do.

Today we can see much more clearly than could either contestant. For Bennett the criteria of pneumonia depended too much on the stethoscope. Alison, on the other hand, stressed the whole course of the disease, the so-called clinical entity, and denied that the " newer knowledge " derived from auscultation or microscopic studies could overthrow the clinical entities which keen observers like Cullen and Gregory had perceived. The problem becomes much simpler when we define our terms precisely. If we can carefully separate off an entity such as lobar pneumonia, and offer fairly rigid bacteriological criteria for its identification, then we can be reasonably sure that our statistical series is fairly homogeneous. If, however, we use as criterion the mere presence of crepitant rales, our series is no longer homogeneous.

As a matter of actual practice, by 1855 blood-letting, even among the older clinicians, had diminished markedly. If the practice was effective for Cullen and Gregory, why did physicians not continue it? Bennett answered, that newer knowledge showed blood-letting to be useless. To make a blunt paraphrase, blood-letting never was any good, but only recently have we discovered this. Alison's contention was, that early bleeding was effective for the pneumonia seen one or two generations before, but the type of pneumonia had changed over the years, making this therapy unnecessary.

It is of course now quite apparent that the two contestants did not really contradict each other. They were talking about different things. Alison said that diseases can change and, specifically, that the disease pneumonia was changing. Bennett declared that the microscopic characteristics of inflammation do not change, that the process was the same in Cullen's day as in the 1850's. Both can be correct. The conflict depends on the definition of pneumonia.

For Bennett inflammation of the lung was the criterion for diagnosing pneumonia. For him pneumonia was the same under every circumstance. And since he maintained that inflammation did not change, then *by definition* pneumonia did not change.

Alison, however, denied that this was a satisfactory definition, and indicated that there was no single criterion for pneumonia. He insisted on direct clinical observation. He declared, and numerous discussants bore him out, that the pneumonia described clinically by Cullen (now called lobar pneumonia) generally improved after blood-letting. These cases

occurred principally in the age group 45 to 60 in persons of " robust and full habit," but this clinical entity was no longer seen very often in hospital practice. The cases now seen, he said, were principally of " typhoid " or " adynamic " character. Much of the lung inflammation now observed he would ascribe " to a previously enfeebled or diseased state of the system, preventing or modifying the febrile reaction which the local inflammation would naturally excite." [25] The pneumonias now observed seemed to be complications, secondary or intercurrent, in persons already suffering from some disease (that is, what we might call secondary bronchopneumonia). These cases, he insisted, were simply not relevant to the pneumonia which Cullen described. We would call them a different clinical entity.

Obviously, Alison was groping for some sort of distinguishing feature which could separate off different groups of pneumonia. That different types existed, he had no doubt whatever. That they all showed " inflammation " in the lung, he could not deny. But Bennett's criterion simply was not adequate to distinguish various kinds of pneumonia one from another. Alison groped in vain, for he did not have the knowledge necessary to establish his point firmly.

As is so often the case, both disputants were correct,—Bennett, in claiming that blood-letting did not influence the course of inflammation; that it had very little therapeutic value in pneumonia; and, when carried out to the extent generally recommended, positively harmed the patient. Alison was correct in distinguishing different kinds of pneumonia, and denying that statistics derived from one type were necessarily applicable to another.

While Alison was firmly convinced that blood-letting cut short inflammation,[26] we get no sound answer when we ask, How did he know? What was his objective evidence? Alison saw what he expected to see, found what he expected to find. He started with the belief that blood-letting was helpful in inflammations. His evidence supported his premise only because the premise was so firmly entrenched to begin with that it needed no support. Alison was a True Believer. For him blood-letting used early was the approved remedy for inflammation. If a patient diagnosed as having inflammation improved after venesection, this indicated that the diagnosis was correct. And this in turn, seemed to indi-

[25] *Ibid.*

[26] W. P. Alison: Reply to Dr. Bennett's observations on the results of an advanced diagnosis and pathology in the management of internal inflammation. *Edinburgh M. J.*, 1857, *2*: 971-995.

cate that blood-letting really did cure inflammation. There is a circular reasoning, in which we "prove" what we assume, and in which each new datum seems to reinforce the whole structure, *provided we accept the entire circle to begin with.*

Bennett, trained in the school of Louis, offered a much more modern attitude. He appreciated the need for controls and for statistical analysis and did not accept the circular reasoning of Alison. Instead, he wanted truly objective evidence. But his own thinking was by no means dispassionate. In his way he was equally dogmatic: since blood-letting is ineffectual, any data purporting to support this claim are palpably false, and cannot be accepted as fact. As one bitter opponent said in discussion, Bennett ". . . looked upon his own opinion as right, and the opinion of every one else as wrong." [27] It is a familiar form of self-delusion, that my opponent relies on opinion only, while my own views are founded on *fact.*

Bennett, nevertheless, travelled the modern highroad of progress. He insisted on quantitative evidence, series of cases, and suitable controls. Such an approach, of course, may still have many pitfalls. A quantitative study gives the appearance of precision, but this may be very specious. There must first be a demonstration that the various individual cases placed together are truly comparable, that they are a homogeneous population regarding the points in question. Bennett failed to analyze pneumonia adequately on clinical grounds, yet his failure does not destroy the value of his method. He needed still greater precision, which later discoveries provided.

The blood-letting controversy, now quite definitely settled, involved general principles of reasoning, of argument, of evidence, of validity. Whenever, in modern times, we face differences of opinion, we can go back to this classic struggle and note the speciousness of apparently sound argument, and the truths in seemingly manifest error. We constantly must face certain issues: What is a fact? How good is our evidence? What conclusions can we rightfully draw? What likely errors beset us? These are universal problems, for all science, at all times. We can achieve more satisfactory answers today, if we carefully study the answers of yesterday.

[27] Medico-Chirurgical Society Meeting April 1, 1857. *Ibid.*, pp. 1044-1052, Discussion of Dr. Andrew Wood.

THE PSYCHIATRY OF PHILIPPE PINEL *

EVELYN A. WOODS AND ERIC T. CARLSON **

The great Revolution of 1789, which ushered in a whole new era in French medicine, made possible the emergence of Philippe Pinel as a prominent figure in the medical world of Paris and his consequent work in the field of psychiatry. Prior to 1789 Pinel was almost entirely excluded from the ranks of leading Paris physicians. The "lowness and intrigue" among the medical men of Paris led a disgusted Pinel to avoid them,[1] and the fact that he had not received his medical education at the Paris medical school, moreover, made him an outsider.[2] But his whole scientific attitude was the true obstacle to Pinel's allying himself with medicine's *ancien régime* in Paris, where progress was condemned as heresy, and medicine was taught almost exclusively from the works of Hippocrates and Galen.

Although most eighteenth-century European physicians were more

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[1] René Semelaigne, *Philippe Pinel et son oeuvre au point de vue de la médecine mentale* (Paris: Imprimeries Réunies, 1888), p. 138. This book is a valuable source of material on Pinel, as are Semelaigne's other works, despite a tendency to be eulogistic. Additional material on eighteenth-century Paris physicians may be found in Paul Delaunay, *Le monde médical parisien au dix-huitième siècle* (Paris: Pousset, 1906), pp. 28-67.

[2] Pinel's first fifteen years in Paris might be termed his apprenticeship. During this time he turned his hand to many enterprises: tutoring, translating, editing, writing, and studying. He did so partly because these intellectual activities were more to his taste than the ceaseless activity of a busy medical practice, and partly because he was unable to obtain the necessary license to practice medicine in Paris. To procure a license an outsider had to appear in competition before the Faculty of Medicine and defend a thesis. If successful, he was granted the degree of doctor-regent and allowed to practice; if not, he was excluded from the ranks of licensed Paris physicians. Pinel appeared in this competition four times, and each time was defeated, not by his lack of knowledge, but by his awkward presentation, for he was not a gifted speaker. A rather ironic anecdote found in several biographies of Pinel recounts the failure of his last attempt to obtain the degree. In this case he was competing against a former gendarme who was defending a thesis on equitation which Pinel had polished to perfection for him in his Montpellier days (René Semelaigne, *Les grands aliénistes français* [Paris: Steinheil, 1894], pp. 28-29).

progressive in attitude than their Parisian colleagues, they still tended to approach medicine in a philosophical rather than a scientific spirit. The years of Pinel's medical training were years in which various theories, approaches, and techniques struggled for supremacy in the medical world. Although most of the prominent figures in medicine praised the technique of induction advanced by Bacon, in practice they tended to make more use of Cartesian deduction—taking a basic premise, they immediately derived the most general principles from it and went on to propound a multitude of medical theories, interpretations of phenomena, and principles of treatment based on only the most fragmentary evidence. Outstanding among these philosophical systems were such schools of thought as the iatro-mechanism of Borelli, Baglivi, and de Sauvages, the iatro-chemistry of Sylvius and Willis, the animism of Stahl, the vitalism of Bordeu and Barthez, and the nervous pathology of Hoffman, Cullen, and Brown.

The attitude of all these systems was opposed in France by the newly-founded ideologist school,[3] which held as its main tenet the proposition that in science theory should be based on accumulation and analysis of abundant data. Originating in Bacon's precepts, their method was derived primarily from Locke's theory of the mind of the newborn as a *tabula rasa* and especially from Condillac's exposition of all mental faculties as originally derived from sensation and modified by association. The ideologists insisted that, since all knowledge came from perception of external phenomena, the only true basis for theory was prolonged and profound observation and analysis of such phenomena—a thorough knowledge of the facts must precede the hypothesis.

Pinel, who had studied science and philosophy at a religious college, received the degree of *maître-ès-arts* in mathematics and earned doctoral degrees in medicine from both the Universities of Toulouse and Montpellier,[4] was fully acquainted with all the opposing theories of the system-builders. He chose, however, to ally himself with the ideologists and whole-heartedly espoused their technique of observation and analysis.

[3] The author's main source on ideology was George Rosen, "The philosophy of ideology and the emergence of modern medicine in France," *Bull. Hist. Med.*, 1946, *20*: 328-339. Pinel's own writings were also of use, as were P. J. G. Cabanis, *Rapports du physique et du moral de l'homme* (Paris: Fortin, Masson et Cie., 1843); Louis Peisse, *La médecine et les médecins* (Paris: Baillière, 1857); and Pierre Victor Renouard, *History of Medicine from its Origin to the Nineteenth Century*, Comegys, tr. (Cincinnati: Moore, Wilstach, Keys & Co., 1856).

[4] Despite his natural taste for study and the fact that both his father and grandfather were physicians, Pinel did not originally plan to be a doctor. After being tutored at

He made this choice because his extensive medical education had impressed him with the folly of attempting to erect complex, all-inclusive systems on the basis of unsubstantiated hypotheses. A cautious approach prevailed in his own research and kept him from committing himself to the defense of any comprehensive theory of disease. He sought to restrict his research to dealing with " only those symptoms and distinctive signs which are recognizable by the senses and which are not susceptible to vague reasoning." [5] Endowed with great intelligence, ability, and persistence, he was able to advance psychiatric knowledge by his thorough study of these " symptoms and distinctive signs "; his research culminated in his innovations in the treatment of insanity. In other words, he not only freed the study of mental illness from the obscuring theories of the system-builders, but also prepared the way for modern psychiatry.

If Pinel's intellectual abilities made him a capable researcher, his natural benevolence made him a sincere humanitarian. Although personally rather aloof and reserved, he nonetheless felt a profound pity for the wretched inmates of eighteenth-century asylums and was eventually led to make their illness his life study.[6] He himself was convinced that in-

home he was sent to complete his study of the humanities at the Oratorian College in Lavaur. Pinel's intellectual ability won him much attention at Lavaur, and the bishop recognized his potential and persuaded him to take minor orders. After four years, however, Pinel left Lavaur and the priesthood for the University of Toulouse and the study of mathematics and medicine (René Semelaigne, *Aliénistes et philanthropes: Les Pinel et les Tuke* [Paris: Steinheil, 1912], pp. 9-12). Pinel received his M. D. from Toulouse in 1773, but, instead of setting about the active practice of medicine, he chose to enroll at the medical school of Montpellier. This decision was apparently prompted by a general disappointment in the calibre of the faculty and the quantity of the instruction at Toulouse, and his consequent sense of not being fully qualified to practice. Famous for its excellent professors, Montpellier in the eighteenth century was one of the outstanding European medical schools and certainly more progressive than the old Paris Faculté de Médecine. It combined the Greek and Arabic traditions in its approach to medical education and emphasized therapeutics rather than theory (Jules Guiart, *Histoire de la médecine française: Son passé, son présent, son avenir* [Paris: Editions Nagel, 1947], pp. 91-96, 168).

[5] Philippe Pinel, *Traité médico-philosophique sur l'aliénation mentale* (Paris: J. A. Brosson, 1809), 2nd. ed., p. 3. This work will be referred to hereafter simply as *Traité*, 2nd. ed.

[6] Pinel first became interested in mental illness in the 1770's, when a young friend died a violent death because of his derangement. Once interested, Pinel began to study the subject intensively. He perused the various ancient physicians, especially Hippocrates, and in the late 1780's he allied himself with a private asylum operated by a M. Belhomme. His reading and his experience at the Belhomme Asylum convinced him that insanity was primarily psychological in origin and should therefore be treated with psychological methods, and he published an article to this effect in 1789 (" Observations sur le régime moral qui est le plus propre à rétablir, dans certains cas, la raison égarée des

sanity was a disease as much as any other, and therefore curable in a majority of cases. Many of his contemporaries and predecessors, affected by the widespread humanitarian movement of the period, had held a similar belief about mental illness, but they differed from Pinel in trying to apply the same therapeutic measures used in cases of purely somatic disease to mental illness. Pinel himself strongly believed that in most cases the psychological approach was more efficacious than the physiological; he had worked with patients and found this to be so.

When Pinel was introduced to their society in the mid-1780's, the ideologists—such men as Cabanis, Cousin, Thouret, Destutt de Tracy, Roussel—had relatively little official power in the medical world of Paris, and so Pinel's connection with them had small practical advantage. With the Revolution, however, the republican-inclined ideologists came to dominate much of the new government, and because they held influential government posts they were able to appoint their colleagues to important offices. Aware of Pinel's thorough knowledge of medicine, they appointed him to the faculty of the new Paris school of medicine; knowing his interest in mental illness and his work with the insane, they made him resident physician to two Paris asylums, first Bicêtre and later Salpêtrière.[7] It is for his psychiatric achievement that Pinel is remembered today, and it is with this aspect of his work that this paper will be concerned.

maniaques," *Gazette de Santé*, 1789, *2*: 13-15). In this same year Pinel visited Bicêtre and observed the lamentable conditions under which the insane existed in that "hospital" (René Semelaigne, *Les pionniers de la psychiatrie française avant et après Pinel* [Paris: Baillière, 1930], p. 13). In 1791 Pinel wrote a memoir on treatment of the insane which so impressed some of his colleagues that when the opportunity came they appointed him to the staff of Bicêtre as the only person qualified to improve conditions there.

[7] In doing this, Pinel's friends had given him a Herculean task to perform, for conditions in Paris asylums at the time were deplorable (Jacques Tenon, *Mémoires sur les hôpitaux de Paris* [Paris: Méquignon, 1816], p. 88). Virtual houses of detention for all individuals unable or unwilling to be independent, law-abiding citizens (Paul Courbon, "Pinel psychiatre," *Annales méd.-psychol.*, 1927, 12 s., *2*: 10-11), Bicêtre and Salpêtrière housed the criminal and the indigent as well as the insane. Functioning thus, they were quite naturally custodial institutions. Persons declared insane were first committed to the Hôtel-Dieu in Paris and there submitted to the current forms of vigorous therapy—bleeding, purging, cold showers, etc. (Raymond de Saussure, "French psychiatry of the eighteenth century," *Ciba Symposia*, 1954, *11*: 1224). If after six months or so their condition was not significantly improved—and frequently it was not—they were then committed to the custodial hospitals as incurable (E. Pariset, "Eloge de Philippe Pinel," in his *Histoire des membres de l'Académie Royale de Médicine*, [Paris, Baillière, 1850], vol. 1, p. 227). The men were sent to Bicêtre, which housed about 280 patients, the women to Salpêtrière, where over 600 persons were confined (De Saussure, *op. cit.*, p. 1223). Pinel went to Bicêtre in 1793; two years later he was transferred to Salpêtrière, where he remained until his death in 1826 (Semelaigne, *Alién. et phil.*, p. 55).

Numerous medical historians have described the European insane asylums in the years before Pinel. In general, conditions were atrocious. There was no provision for cleanliness or comfort, much less for anything resembling therapy (probably because at the time the insane were considered both insensible and incurable), and asylums were custodial institutions rather than therapeutic hospitals. There were exceptions to this situation, but barbarity and ignorance were the rule.

This situation was destined to change, however, for throughout Europe a general movement towards psychiatric reform was developing. Outstanding in this movement were Daquin [8] in southeastern France, Chiarugi [9] in Italy, and Tuke [10] in England, as well as Pinel in Paris. All these men were appalled by their predecessors' failure to recognize the value of kindness and sympathy in the treatment of the insane. In the eyes of the reformers, the outstanding fault of the old practice was the use of chains, and so, virtually simultaneously, they all experimented with unshackling the insane, with according them humane treatment generally, and with using psychological therapy. This new approach, which soon spread through Europe and America, was known as moral treatment.

It was Pinel, however, who became most famous for these psychiatric innovations, and who took his place in the forefront of this simultaneous movement towards enlightened treatment of the insane.[11] Here, as in all his research, Pinel avoided ambitious hypotheses, feeling it possible to be an able psychiatrist—that is, to treat patients successfully—without espousing any precise psychological system. Because of his distaste for theory and hypothesis, Pinel refused to discuss the more abstract questions

[8] Joseph Daquin (1733-1815) set forth his views and experiences in 1791 in a work entitled *Philosophie de la folie* (Chambéry: Gorrin); in 1804 he brought out a revised edition dedicated to Pinel, whom he regarded as his master.

[9] George Mora has written several authoritative articles on Chiarugi, including "Vincenzo Chiarugi (1759-1820)—His contribution to psychiatry," *Bull. Isaac Ray M. Lib.*, 1954, *2*: 51-104; "Bicentenary of the birth of Vincenzo Chiarugi (1759-1820), A pioneer of the modern mental hospital treatment," *Am. J. Psychiat.*, 1959, *116*: 267-271; and "Vincenzo Chiarugi (1759-1820) and his psychiatric reform in Florence in the late eighteenth century," *J. Hist. Med. & Allied Sc.*, 1959, *14*: 424-433.

[10] William Tuke, a Quaker merchant, established the York Retreat in the 1790's. His work was carried on by his grandson, Samuel Tuke, who published an account of the Retreat in 1813: *Description of the Retreat, an Institution Near York* (Philadelphia: Isaac Pierce).

[11] Pinel's prominence is explained by the fact that he worked in Paris, wrote in French, and made a name for himself with his *Nosographie philosophique, ou la méthode de l'analyse appliquée à la médecine* (Paris; 1798). In addition, he avoided making damaging mistakes by refusing to theorize, and he trained a generation of successors who carried on his fame.

of psychiatry, such as the operation of the mind and the real nature of mental illness.[12]

He concentrated instead on the external characteristics of insanity, and in doing so he encountered a problem which still troubles psychiatry: what method of studying the infinite variations of thought, emotion, and behavior will reveal the basic elements beneath the overt and subjective manifestations of illness? Pinel's solution was, of course, analysis. In attempting to apply analysis to psychiatric research he demonstrated a depth of awareness and understanding of this new scientific method not shared by most of his medical contemporaries and successors, although at the same time he was led into certain incorrect conclusions because of the difficulty of applying analysis to psychiatric material. Pinel was always willing, however, to emend his statements when further experience proved them mistaken.[13]

It was Pinel's belief that by observing numerous patients and by keeping detailed records he would eventually discover the component and fundamental factors of insanity. Consequently he studied and recorded such signs of illness as disordered speech, unusual actions, expression of bizarre emotions, and various somatic changes.[14] In time his researches led him to certain conclusions about the various types of mental illness and its various causes.[15]

After following many cases from onset of illness through recovery, Pinel concluded that there were four general types of insanity:[16] melan-

[12] For purposes of accurate description of the various manifestations of mental illness, Pinel adopted the psychological vocabulary of Locke and Condillac and referred to "the intellectual faculties" and "lesions" thereof, but he declined to base his psychiatry on their psychology which defined insanity as unnatural liaison of logically incompatible ideas. His observation of cases of insanity in which there were no delusions or lesions of judgment (*i. e.* manie sans délire) had proven to him the inaccuracy of this definition. Nor did Pinel join the majority of his medical colleagues in accepting the thesis of Locke and Condillac that the cause of insanity was always some organic lesion of the brain. His autopsies had shown him that insanity could occur without brain damage, and, moreover, that brain damage could occur without insanity.

[13] For example, at first Pinel asserted that in cases of periodical mania only the most powerful medications could have any helpful effect, and that therefore the physician should not hesitate to prescribe them. Further observation, however, demonstrated to him that even periodical mania was better treated with psychological methods than with medications (*Traité*, 2nd ed., p. 368).

[14] *Traité*, 2nd. ed., p. 136.

[15] Pinel's conclusions about cause and diagnosis may be found in both the *Traité* and the *Nosographie philosophique*.

[16] In the last edition of his *Nosographie philosophique* (Paris: J. A. Brosson, 1818) Pinel added four more categories of insanity: hypochrondria, somnambulism, nightmare, and hydrophobia.

cholia, mania, dementia, and idiotism.[17] He recognized, however, that these diagnostic categories were not mutually exclusive, for he had seen patients shift from one to another in the course of their illness.[18] Melancholia was classically characterized as depression, but to Pinel it signified, essentially, a disorder of the intellectual faculties, especially those of perception and imagination, so that the individual's thoughts became fixated on a single idea, usually delusional in character. The melancholic's mood might be extremely elated or depressed; his actions were rarely violent. Judging by Pinel's excellent and detailed clinical descriptions, we today would classify these cases as schizophrenic, affective, paranoid, or organic conditions, and possibly as severe psychoneuroses.

Mania, classically termed fury, was a much more complex illness, whose outstanding characteristic was "strong nervous excitement."[19] This "excitement" usually took the form of irrational violence, and the intellectual faculties and the emotions (or passions) were disturbed. Pinel subdivided mania into "manie avec délire," which might be either periodical or continual, and "manie sans délire," in which the patient was extremely violent but still rational, that is, he still knew who he was and what he was doing.[20]

Certain patients with conditions which we today know as catatonic schizophrenia, chronic regressed schizophrenia, organic brain disease, and mental deficiency, were termed demented or idiotic by Pinel, who considered them generally incurable. In the demented the faculty of association was so impaired that there was no connection between successive ideas, nor between ideas and sense perceptions; although always moving, the patient was incapable of directed activity. The idiot, on the other hand, was sunk in a continual state of apathy caused by partial or total obliteration of the emotions and intellectual faculties.[21]

[17] At Bicêtre, 40% of the patients suffered from "manie avec délire," 7.5% from "manie sans délire," 30% from idiotism, 13.5% from melancholia, and 9% from dementia.

[18] Philippe Pinel, *A Treatise on Insanity*, D. D. Davis, tr. (Sheffield: W. Todd, 1806), pp. 172-173. This work will be referred to hereafter as Davis Translation.

[19] *Ibid.*, p. 159.

[20] Because patients suffering from "manie sans délire" retained their powers of understanding even during their spells of violence, Pinel originally placed them in a fifth category, but further research demonstrated to him that in all other respects these patients manifested the characteristics of true mania, and he re-organized his nosological system accordingly (*Traité*, 2nd. ed., p. 138, footnote). In his article "Pinel's conception of the psychopathic state," *Bull. Hist. Med.*, 1949, *23*: 461-468, Jerome Kavka identifies "manie sans délire" with what today's terminology describes as the psychopathic or sociopathic personality.

[21] This apathetic condition was not necessarily congenital. One of the unfortunate

Pinel initially expressed scorn for the scholastic concern with causes of mental illness and presented his own ideas on the subject in an incidental, scattered fashion. Later, however, he himself chose to make aetiology a major topic for discussion. He divided causes into two basic species: predisposing and occasional. Comprised in the former were heredity, an extremely irregular mode of life, and what he termed the spasmodic, oppressive, and expansive passions. Among the numerous occasional causes were alcoholism, hypochrondria produced by excesses, brusque suppression of internal hemorrhage or skin eruptions, menopause, aftereffects of various fevers, gout, and a violent blow on the head. The logic of his analytic approach had brought him to the brain as the seat of illness, but he was sufficiently clear-headed to recognize that, when his autopsies revealed no organic pathology, he would have to rely on his records and observations of a case. This approach in turn led him to emphasize the patient's way of life and his emotions as causative factors in his illness.[22]

Far more significant than his general concepts about classification and cause, however, are Pinel's contributions to psychiatric treatment. He began by attempting to learn the true character of a disease and "to find what helpful resources nature could produce"[23] by allowing the disease to proceed unmolested by indiscriminate medical treatment and unobscured by pre-formed bias. Having achieved a thorough knowledge of the various manifestations of mental illness, Pinel felt he was ready to

results of Pinel's dependency upon symptoms was his failure to recognize the difference between mental deficiency and the degenerated psychotic state. Both states had similar external manifestations, and so he considered them similar in nature. It remained for his successor, Esquirol, to clarify this point.

[22] Some of Pinel's "occasional causes" (*e. g.* suppression) reveal his unconscious acceptance of current medical doctrine. His list of causes also reveals the danger of trying to isolate causes; many of the conditions which Pinel terms causes we would now consider early manifestations of illness (*e. g.* alcoholism).

[23] *Traité*, 2nd ed., p. 309. Pinel's entire medical training led him to take this attitude of non-interference with the innate curative powers of the body's economy. Drilled from his earliest years in the precepts of Hippocratic medicine, Pinel was inevitably influenced by its doctrine (*vis medicatrix naturae*) that when attacked by illness the organism marshalls all its forces to oust the disease (Max Neuburger, *The Doctrine of the Healing Power of Nature Throughout the Course of Time*, Linn J. Boyd, tr. [New York, 1933], p. 6). This faith in the body's instinct to combat disease was re-inforced by his education at Montpellier, seat of the vitalist philosophy of Bordeu and Barthez. These men propounded the doctrine that a "vital force," neither mechanical nor divine, controls the body and its health, and that this force always strives to throw off disease. Both the ancients and the vitalists had observed that in fact the body does have certain intrinsic defenses against illness, and consequently both of them opposed impulsive and unreasoned use of medications. Pinel had observed the same phenomenon, and so he reserved pharmacological methods for desperate cases in which the natural curative powers needed outside assistance.

initiate active therapy. His methods of treatment had a simple criterion of worth: effectiveness;[24] he made no attempt to explain the entire curative process, because to do so would have required unnecessary hypothesizing.[25]

In general, Pinel's therapeutic system involved introduction of psychological techniques in place of the accepted physical methods. The first major step in Pinel's total program of moral treatment was his decision to free the patients at Bicêtre and Salpêtrière of their chains.[26] The favorable results of this experiment convinced Pinel that an important factor in achieving a cure was to accord the patient "a limited liberty in the interior of the hospital, allowing him all the movements of non-dangerous effervescence. . . ."[27]

The most vital aspect of Pinel's therapeutic program was the psycho-

[24] With his mathematical background (his M. A. thesis was entitled "De la certitude que l'étude des mathématiques imprime au jugement dans son application aux sciences") Pinel naturally saw in figures a dependable method of assessing results, and so statistical presentation of his material became one of his favorite techniques of evaluating his therapeutic observations. He advised that physicians everywhere spend less time citing their cures and more time studying the percentages of success of each treatment tested (*Traité*, 2nd. ed., p. vi). So impressed was Pinel with the worth of statistics that he published a memoir on their use (*Résultats d'observations et construction des tables pour servir à déterminer le degré de probabilité de la guérison des aliénés* [Paris: Badouin, 1808]) and tried to inspire his students to rely on the statistical method.

[25] Pinel was not opposed to "working hypotheses," without which it would be impossible to embark upon any directed scientific research. His attitude was, however, that in doing such research in medicine "one should be guided by the method which is so consistently successful in all departments of natural history, that is to say that one should observe succesively each subject at a time and do this without any intent other than to gather material for the future" (*Traité*, 2nd. ed., p. 3). He was opposed to the wild hypothesizing of so many of his predecessors who were unable to resist the temptation to explain all phenomena in the light of contrived philosophical systems. In the introduction to his work on mental illness he remarks that certain system-builders may censure him for not having engaged in "high speculations" and commented on their various theories. His reply to them was: "I could hardly cite these doctrines except as examples of aberration of the reason and of delirium, and in order to preserve the peace I have taken the wise course of passing them in silence" (*Ibid.*, p. 9).

[26] For over a century and a half, historians have referred to the "geste" of Pinel in freeing the patients of Bicêtre and Salpêtrière of their chains. Gregory Zilboorg (*A History of Medical Psychology* [New York: W. W. Norton, 1941], pp. 319-341) gives a graphic but over-glamorized description of this event, leaving the reader with the erroneous impression that, braving the Revolutionary government, Pinel freed all the inmates immediately and completely. In actual fact, Pinel observed the patients confined within the hospital and judiciously selected a few upon whom to test the effect of unshackling. He substituted strait-jackets for their chains and was careful at all times to have several strong attendants nearby to overpower the patient if he seemed dangerous. With experience he learned that most patients could be allowed complete liberty within the hospital, and so he discarded the use of strait-jackets as well as of chains in most cases.

[27] *Traité*, 2nd. ed., p. 262.

logical, and fundamental to this approach was kindness, combined with firmness and supported if necessary by strategy or coercion.[28] Pinel's basic therapeutic principle was his belief that:

> in the greatest number of instances . . . the experience of every day attests the value of consolatory language, kind treatment, and the revival of extinguished hope. Severity in cases of this description can answer no other purpose than those of exasperating the disease, and of frequently rendering it incurable.[29]

Believing thus, he attempted in all cases to effect a cure by gaining the patient's confidence in his good intentions and then convincing the patient that he should not lose hope, that recovery was still possible. In many cases, however, it was necessary to temper benevolence with discipline; Pinel could not be completely "permissive" with his patients, because in his opinion they had to learn self-control, and the way to learn self-control was to be reprimanded when disobedient.[30]

Some cases, however, were not readily amenable to this disciplinary benevolence and consequently required strategy or coercion. Strategy was utilized for patients suffering from delusions dangerous to themselves or to others. In such cases, the superintendent might try merely to subdue the patient by capitalizing on the delusion itself, or he might attempt to create a situation which, by suggestion, would force the patient to see the error of his delusion and reject it.[31] Coercion was used on the most recalcitrant patients and was intended to cow them into docility with a display of force without actually harming them. The fear aroused in the patient would enable the superintendent to dominate him but would be therapeutically useless unless the patient realized the reason for it and respected the authority behind it. Restraints such as strait-jackets and isolation rooms were also part of Pinel's coercive technique and administered in the same way as the show of force, that is, kept in use only until the patient became calm and obedient.

[28] It is interesting to note that Pinel himself did not do most of the work with the patients. He preferred to remain apart, observing and directing, while his lay superintendent dealt with the patients. This superintendent, a man named Pussin, was already at Bicêtre when Pinel came in 1793. A congenial relationship sprang up between the two men, and they worked together to study and treat the patients. Although he had had little formal education or training, Pussin had a natural talent for psychiatric work which made him invaluable to Pinel. Like Pinel, he disapproved of the use of chains; according to one source he had already experimented with less barbarous methods of restraint before Pinel's appointment (Pariset, *op. cit.*, p. 227).

[29] Davis Translation, p. 100.

[30] *Ibid.*, pp. 103-106.

[31] In his first known article on treatment of mental illness (see footnote 6) Pinel gives several examples of such strategems and praises them highly.

Pinel attempted to re-inforce these various psychological techniques by carefully supervising the patient's mode of life and his social contacts, and he strongly emphasized the value of hospitalization for both these purposes. The insane person should receive good physical care, being as well fed and kept as generally comfortable as possible, he should lead a regular life according to a strict schedule, and he should be secluded among those in a similar condition, because indiscriminate contact with others was harmful to him. Consequently, since friends and relatives had been observed to be the people most likely to augment his derangement, the patient should be hospitalized. Throughout his time in the hospital, moreover, the patient should live among people suffering from the same type of illness in the same degree, and he should be shielded at all times from the gibes of idly curious strangers.

In addition to adopting certain psychological techniques and abandoning the use of chains, Pinel also discarded the indiscriminate use of medication for insanity. His researches had proven to him that heavy medication only interfered with recovery in most cases.[32] When he did prescribe medicine, Pinel usually administered doses which were milder than those in general use; he used purgatives and emetics on occasion, because he had observed the "very active influence"[33] which the condition of the stomach had upon the deranged mind, but he used only the more gentle drugs rather than the powerful ones so admired by the ancients. Sedatives also held a subsidiary place in Pinel's program of treatment; he would use them to calm a patient to the point where he could be introduced to moral treatment. Pinel roundly condemned the common practices of beating and bleeding the insane. In his opinion, both corporal punishment[34] and bloodletting[35] were more likely to harm than help the patient.

Although Pinel abandoned many of the commonly-accepted physical methods of treating the insane, he did popularize warm baths and occupational therapy. He observed that a warm bath was invariably helpful in calming patients, and believed that in a few cases a sudden brief shower of cold water upon the head at the end of the bath might render a patient more docile. He was also among the first to include work in his therapeutic program. He had the greatest faith in its value to the patient,[36] and therefore bent all his efforts to institute such a system at Bicêtre and Salpêtrière, giving patients work provided by various Paris merchants and hiring some convalescents as attendants.

Pinel's conception of treatment for mental illness included all the aspects

[32] Davis Translation, p. 68.
[33] *Traité*, 2nd. ed., p. 358.
[34] *Ibid.*, p. 254.
[35] *Ibid.*, pp. 320, 476; Davis Translation, p. 251.
[36] *Traité*, 2nd. ed., p. 239.

mentioned here; one must not think that he applied only one method of therapy to each patient. Although he was strongly opposed to combining diverse techniques simultaneously and at random, he realized that as a patient's condition changed the treatment applied to him should change accordingly. He placed great reliance upon psychological methods, but was willing to use other techniques if they seemed necessary.

Not only did Pinel put his therapeutic principles into effect at Bicêtre and Salpêtrière; he also set them forth in his book entitled *Traité médico-philosophique sur l'aliénation mentale*.[37] With great clarity and relatively little theoretical bias, Pinel described in it his work with the mentally ill and, both by direct exposition and by example, his observational technique. He described various cases and demonstrated that since it could be cured within a hospital setting with proper treatment, mental illness was most certainly a problem for the physician rather than for the jailer or the priest. Since his time psychiatry has been a medical speciality.

In addition to describing his psychiatric work in this volume, Pinel also introduced many young men to psychiatry by working with them at Salpêtrière. His most famous pupil was Jean-Etienne-Dominique Esquirol; Esquirol in turn passed Pinel's precepts on to another entire generation of French psychiatrists—such men as Georget, Ferrus, Falret, Voisin, and Trélat.

It is not so much for his famous "geste" of unchaining certain unfortunates, therefore, that Pinel deserves the fame he has today. Other men did similar work independently and simultaneously. Pinel merits recognition for having abandoned cumbersome hypotheses and out-moded prejudices in his medical research and for having popularized a new therapeutic approach to insanity. Very much a product of the eighteenth-century enlightenment, Pinel wished to apply a new technique of science to a new field of medicine. His sincere attempt to be objective in his research, the humane treatment which he applied to his patients, and the clarity with which he set forth what he had observed and concluded would make him much admired among scientists and physicians today.

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[37] The first edition of this work appeared in 1801. In the same year it was translated into German by Mich. Wagner (*Philosophischmedicinische Abhandlung über Geistesverirrungen oder Manie* [Vienna: C. Schaumburg]); in 1804 Luis Guarnerio y Allavena produced a Spanish version (*Tratado médico-filosófico de la enajenación del alma o mania* [Madrid: Imprenta Real]), and finally in 1806 D. D. Davis brought out his English version. In 1809 the second edition appeared. The authors have also seen two references to a third edition of around 1818, but have not been able to verify them.

HISTORIOGRAPHIC AND CULTURAL TRENDS IN PSYCHIATRY: A SURVEY *

GEORGE MORA

In evaluating the development of the historiography of psychiatry, one cannot but be impressed by the remarkable uncertainty of approach in dealing with a topic which traditionally, throughout its history, has resisted being clearly defined as to its fundamental themes and its boundaries. This stands somewhat in contrast to historiography of medicine in general, which is not confronted with such basic difficulties. In other words, the historical development of psychiatry—as compared to that of general medicine—presents an intrinsic ambiguity: while the establishment of psychiatry as a specialized field of medicine is perhaps the latest of the major differentiations of medicine, attitudes toward mental patients, beliefs concerning the etiology of mental diseases, as well as therapeutic attempts based on various principles, can be traced back for centuries.

The aim of this paper is properly to follow this ambiguity of scientific and cultural viewpoints throughout the development of the historiography of psychiatry and to show how the recent discovery of the unconscious has resulted in a better and deeper understanding of such ambiguity, and has opened the way to an entire re-evaluation of the history of psychiatry and of its basic issues.

Psychiatry, as a field of clinical medicine, began in the latter part of the 18th century, when a new attitude developed toward mental patients as a consequence of the new spirit of inner freedom brought about by the Enlightenment. Such an attitude had timidly appeared previously in historical situations similar to that of the late 18th century, namely, at the time of those historical conjunctures, of those silent revolutions deeply influencing the inner development of men. The first such conjuncture came with the humanitarian attitude toward mental patients of Aretaeus and Soranus (as reported by Caelius Aurelianus)[1] in the second century

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[1] Both Aretaeus of Cappadocia and Soranus (2d. century A. D.) introduced an humanitarian approach to mental patients, as reported by Caelius Aurelianus (5th century A. D.) in his works *On Acute Diseases* and *On Chronic Diseases*. Such an humanitarian approach consisted of a method of treatment based on mild application of restrictions, on

of our era, at the moment of the integration of Christian values into the classic tradition and, at the same time, of the deeper introspective urge precipitated by the fall of the Roman institutions. The second came in the early 16th century with the new humanitarian attitude toward mental patients of humanists such as Erasmus, Vives, Paracelsus, and Weyer, at the moment of a critical and philosophical re-evaluation of man toward himself, of his dimensions, of his proportions, and of his distance from the infinite.[8]

These themes, which would require ample elaboration outside the limits of this paper, are mentioned here because of the common need of the founders of modern psychiatry, especially of Pinel in France, to a lesser degree of Chiarugi in Italy, even less of the layman William Tuke in

physical treatment, on personal contact with the physician, and on environmental manipulations. On this early humanitarian approach: A. Semelaigne, *Etudes historiques sur l'aliénation mentale dans l'antiquité*, Paris: Asselin, 1869; M. de Tornéry, *Les maladies nerveuses pendant l'antiquité graeco-romaine*, Paris: Jouve, 1892; S. E. Jelliffe, "Notes on the history of psychiatry," *Alienist and Neurol.*, 1910-1917, *31-38*, (several articles).

[8] Although most of the humanists did not show a particular interest in mental diseases, they all focused—under their apparent philologic and historical interest—on the most human aspects of life. This was in contrast to the concepts of the medieval man, which had focused almost exclusively on the relationship of man to God. More than their direct contributions, it is therefore their philosophy of life which is historically important for the development of a new attitude toward mental patients out of which ultimately psychiatry was born. Paracelsus (1493-1541) made many references to psychological disturbances in his works, especially in the book *Krankheiten so der Vernunft berauben* (Eng. tr. by G. Zilboorg, in H. Sigerist (ed.) *Four Treatises of Theophrastus von Hohenheim, called Paracelsus*, Baltimore: Johns Hopkins Univ. Press, 1941). He emphasized the autonomy of the unconscious versus the conscious life anticipating a dynamic concept of the human mind, considered hysteria on a sexual basis, distinguished neurosis from psychosis, and recommended persuasion and other psychological means for the treatment of mental patients. In the light of his "holistic" concept of man, many of his ideas, when translated into modern terms, acquire definite meaning for the understanding of human psychological phenomena. On Paracelsus' psychiatry: H. Damerow, "Paracelsus über psychische Krankheiten," *Wissensch. Ann. d. ges. Heilk.*, 1834, *28*: 389-427 (on this article: E. Harms, "H. Damerows Interpretation der psychiatrischen Ideen des Theophrastus Paracelsus," *Schweiz. Ztschr. f. Psychol.*, 1959, *18*: 92-103); R. Allendy, "La psychiatrie de Paracelse," *Nova Acta Paracelsica*, 1945, *2*: 121-128; I. Galdston," The psychiatry of Paracelsus," *Bull. Hist. Med.*, 1950, *24*: 205-218.

Johann Weyer (or Wier) (1515-1588) is commonly considered the first psychiatrist because of his book *De prestigiis daemonum* (1563) in which he rejected the belief in witchcraft, described clinical cases of mental patients with human understanding, and considered their treatment a part of the physician's duty. On Weyer: A. Axenfeld, *Jean Wier et la sorcellerie*, Paris: Baillière, 1866; C. Binz, *Doctor Johann Weyer*, Berlin: Hirschwald, 2d. ed., 1896; E. T. Withington, "Dr. John Weyer and the witch mania," in C. Singer (ed.), *Studies in the History and Method of Science*, Oxford: Clarendon Press, 1917, vol. I, pp. 189-224.

England,[3] to reconstruct the historical background of the new philosophy of "moral treatment." In their enthusiasm for the new "discovery" of moral treatment, the early "reformers" of psychiatry focused their historical surveys on the organically oriented scientific approach of the 18th century, unconcerned with their distant predecessors.[4]

Psychiatry thus slowly developed, in the old as well as in the new world, through the efforts of men such as Esquirol, Georget, Falret, Langermann, Conolly, Daniel Tuke, Benjamin Rush, and Isaac Ray[5] and culminated in this country with the foundation of the American

[3] As is well known, the merit of having initiated the reform of the treatment of mental patients is generally attributed to these three men. Vincenzo Chiarugi (1759-1820) accomplished his reform in Florence in 1788 in the Bonifazio hospital with the help of the Grand Duke Leopold; Philippe Pinel (1745-1826) initiated his reform at the Bicêtre in Paris in 1793 and later continued it at the Salpétrière; William Tuke (1732-1822) opened the "Retreat" at York, England, in 1796. Although these precursors were all influenced by the same cultural climate of the late 18th century, Chiarugi belongs more properly to the socio-economic phase of the so-called Italian "enlightened absolutism," Pinel to the socio-political movement of the French revolution, and Tuke to the humanitarian aspect of the Quaker movement. On Pinel and on William Tuke: R. Semelaigne, *Philippe Pinel et son oeuvre au point de vue de la médecine mentale*, Paris: Impr. Réunies, 1888; id., *Aliénistes et philanthropes. Les Pinel et les Tuke*, Paris: Steinheil, 1912; *The Retreat, York, Addresses Given During the 150th Anniversary Celebrations*, William Sessions, York: Ebor Press, 1946; on Chiarugi: G. Mora, "Vincenzo Chiarugi. His contributions to psychiatry," *Bull. Isaac Ray. M. Lib.*, 1954, *2*: 50-105; id., "Vincenzo Chiarugi and his psychiatric reform in Florence in the late 18th century," *J. Hist. Med. & Allied Sc.*, 1959, *14*: 424-433.

[4] Both Chiarugi in his treatise *Della pazzia* (1793-94) and Pinel in his *Traité médico-philosophique sur la manie* (1801) made an effort to follow the historical development of psychiatry but remained practically unaware of the two above-mentioned forerunning contributions of Aretaeus and Soranus and of the humanists of the 16th century.

[5] Jean-Etienne-Dominique Esquirol (1772-1840), the most brilliant of Pinel's pupils, contributed especially to clinical psychopathology and to the legal aspects of mental diseases in his famous book *Des maladies mentales* (1838). Of the other disciples of Pinel, Etienne Georget (1795-1828), Jean Pierre Falret (1794-1870), as well as Guillaume Ferrus (1784-1861) and Félix Voisin (1794-1872), are worth remembering for their contributions to different fields of psychiatry. Johann Gottfried Langermann (1768-1832) introduced the reform in the treatment of mental patients in Germany between 1805 and 1810. John Conolly (1794-1866) is considered the founder of the system of non-restraint which he explained in his book *An Inquiry Concerning the Indications of Insanity; with Suggestions for the Better Protection and Cure of the Insane* (1830). Daniel Hack Tuke (1827-1895), the most illustrious of the successors of William Tuke, became well-known for his *Manual of Psychological Medicine* (1885) and *Dictionary of Psychological Medicine* (1892). Benjamin Rush (1745-1813), one of the signers of the Declaration of Independence, is remembered here for his work *Medical Inquiries and Observations upon the Diseases of the Mind* (1812). Isaac Ray (1807-1881), perhaps the most brilliant of the 19th century American psychiatrists, is well-known for his many contributions to psychiatry, especially in the field of legal psychiatry (*Medical Jurisprudence of Insanity*, 1838).

Psychiatric Association in 1844,[6] and, around the same time, with the foundation of independent psychiatric journals,[7] indicating official acceptance as a separate field of medicine.

But the enthusiasm for moral treatment, culturally an expression of the renewal of society brought about by the French and the American Revolutions, faded away after a few decades. It certainly could not find support and continuity in the uncritical, though at times precursory, attitude of such German psychiatrists as Heinroth, Beneke, Ideler, and von Feuchtersleben,[8] representatives of German romanticism, or, on the other hand, in the strictly organic orientation of Nasse and Jacobi.[9] Science, however, was rapidly developing all over the world, but especially in Germany, and was laying down its rigid methodological criteria in which moral treatment obviously could not find a place because of its empirical nature resistant to all attempts at measurement and validation. In the

[6] The foundation of the American Psychiatric Association—originally called Association of Medical Superintendents of American Institutions for the Insane—has assumed a very important historical significance in the history of American medicine. Such an event represents, in fact, the official recognition of psychiatry as a distinct specialty and marks the beginning of the program of state legislation for mental patients.

[7] A few German journals can be considered as precursors in the field of psychiatry: the *Zeitschrift für psychische Aerzte* edited by Nasse, 1818, the *Magazin für die philosophische, medicinische und gerichtliche Seelenkunde*, by Friedreich, 1829, the *Zeitschrift für die Beurteilung und Heilkunde krankhafter Seelenzustände*, by Jacobi and Nasse, 1838. However, it is only after 1840 that more lasting journals, some of which are still in existence today, were founded in different countries: the *Annales médico-psychologiques* by Baillarger, 1843, the *Allgemeine Zeitschrift für Psychiatrie* by Damerow, 1844, the *American Journal of Insanity* by Brigham, 1844, and the *Journal of Psychological Medicine and Mental Pathology* by Forbes Winslow in England, 1848. For the early psychiatric periodical literature, *see*: M. K. Amdur, "The dawn of psychiatric journalism," *Am. J. Psychiat.*, 1944, *100*: 205-216; J. Bodamer, "Zur Entstehung der Psychiatrie als Wissenschaft im 19. Jahrhundert," *Fortschr. d. Neurol., Psychiat.*, 1953, *21*: 511-535.

[8] Johann Christian Heinroth (1773-1843) expressed views which were later considered an anticipation of the dynamic concept of the personality; Friedrich Eduard Beneke (1798-1854) emphasized the relationship between psychological and bodily processes; Wilhelm Ideler (1795-1860) described passions as the instinctual drives of human beings; E. von Feuchtersleben (1806-1849) stressed the importance of psychotherapy as a method of treatment of the total personality. Unfortunately, these German psychiatrists, as well as others of the same period, mingled these points with the philosophical and religious themes of the romantic period, so that their contribution to psychiatry was overlooked in the past and it is still today a controversial matter. *See* on this period: G. Zilboorg, "Humanism in medicine and psychiatry," *Yale J. Biol. & Med.*, 1943-1944, *16*: 217-230.

[9] Friedrich Nasse (1778-1851) believed in a purely organic explanation of mental phenomena; Maximilian Jacobi (1775-1858) took an even stronger position in this respect, and this view prevailed in the second part of the 19th century. On Nasse: H. Schipperges, "Leitlinien und Grenzen der Psychosomatik bei Friedrich Nasse," *Confinia Psychiatrica*, 1959, *2*: 19-37.

meantime, in the process of general categorization of knowledge ambitiously attempted by idealistic philosophy, historiography started to develop as an independent field and to contribute to the formation of national entities based on cultures and languages.

In view of these developments, it could be predicted that the earliest representatives of official psychiatry to occupy themselves specifically with the development of their own field, would limit their studies to the role played by organic pathology in psychiatry. Moral treatment remained relegated to few places for several decades. Even such a remarkable fact as the centuries old colony of Gheel in Belgium, described by many authors of the middle 19th century,[10] was considered more a matter of curiosity than of scientific interest. Griesinger's book on mental diseases, anticipating many views of modern ego psychology—as has been recently pointed out [11]—was accepted by his contemporaries only as a contribution to the organic philosophy of psychiatry.

The second part of the 19th century witnessed the definite supremacy of organicism in psychiatry, further supported by the discoveries of the pathogenesis of general paralysis, of senile psychoses, and of alcoholic polyneuritis. The formation of characteristic trends of psychiatry in different countries, especially histopathological trends in Germany, clinical trends in France, and criminoanthropological trends in Italy,[12] did not prevent a common organicistic, and frequently materialistic, attitude from prevailing in the old as well as in the new world. This period of psychiatric historiography was characterized by an uncontrasted emphasis on the achievements of the organic approach to psychiatry, with almost total disregard for psychological treatment. The historical chapters of many psychiatric textbooks of the time, such as those by Leidesdorf, by Schüle, and by Meynert,[13] reflect this historiographic trend.

[10] Among the abundant literature of the 19th century on the colony of Gheel, the studies by J. Moreau de Tours (1845), by P. J. Maes (1845), by E. Pi Y Molist (1856), and by J. Falret (1862) are especially important.

[11] R. Kuhn, "Griesinger's Auffassung der psychischen Krankheiten und seine Bedeutung für die weitere Entwicklung der Psychiatrie," in *Beiträge zur Geschichte der Psychiatrie und Hirnanatomie*, New York, Basel: Karger, 1957, pp. 41-67; M. Altschule, *Roots of Modern Psychiatry. Essays in the History of Psychiatry*, New York: Grune & Stratton, 1957, pp. 24-55.

[12] The Italian crimino-anthropological school was founded and best represented by Cesare Lombroso (1835-1909) who stressed in his extensive studies of delinquents the frequency of physical and mental anomalies due partly to degeneration and partly to atavism. His main works are: *L'uomo di genio* (1888), *L'uomo delinquente* (1889) and *La donna delinquente* (1893). See the recent study by B. Di Tullio, "Cesare Lombroso," *Scientia med. Italica*, 1955, *4*: 187-192.

[13] M. Leidesdorf, *Lehrbuch der psychischen Krankheiten*, Erlangen: Enke, 1865; H.

But a reaction against this trend began to become manifest with the rise of idealistic and spiritualistic philosophies and of German historicism. Following Dilthey's classification of psychology under the *Geisteswissenschaften*, rather than under the *Naturwissenschaften*, and following the tremendous rise in individualism brought about by Kierkegaard, Wagner, Nietzsche, and Dostoevski, even psychiatry became fascinated with the study of degeneration and with the relation of mental pathology to artistic creativeness.[14] However, this did not prevent Kraepelin from emphasizing the descriptive approach to psychiatry in his nosological classification of mental diseases, which was widely accepted by psychiatrists.

The following period of psychiatric historiography was characterized by the application of historiographic methods and principles to psychiatry. Broad syntheses of psychiatric developments were achieved in Germany by Kornfeld, by Kraepelin, and by Heinrich Laehr and Theodor Kirchhoff;[15] in France by Réné Semelaigne;[16] in this country more recently (as historiography has a more recent tradition here) by Albert Deutsch and by the American Psychiatric Association.[17] Of the remaining contributions which appeared in other countries in the same historiographic line, the most important are the histories of psychiatry published in Russian by Kannabikh, in Danish by Beyerholm, in Italian by Ferrio, up to the very recent one in German by Ackerknecht.[18]

Schüle, *Handbuch der Geisteskrankheiten*, Leipzig: Vogel, 1878; Th. Meynert, *Psychiatrie*, Wien: Braumüller, 1884.

[14] The best-known representatives of this trend in psychiatry are J. J. Moreau (1804-1884), P. J. Möbius (1853-1907) who wrote pathographies of Rousseau, Goethe, Schopenhauer, and Nietzsche, as well as B. A. Morel (1809-1873) and J. J. V. Magnan (1835-1916) who stressed the relation of mental pathology and degeneration. *See*: G. Genil-Perrin, *Histoire des origines et de l'évolution de l'idée de dégénérescence en médecine mentale*, Paris: Leclerc, 1913.

[15] S. Kornfeld, "Geschichte der Psychiatrie," in Th. Puschmann's *Handbuch der Geschichte der Medizin*, Jena: Fischer, 1905, vol. III; H. Laehr, *Gedenktage der Psychiatrie*, Berlin: Reimer, 4 ed., 1893; id., *Die Literatur der Psychiatrie, Neurologie und Psychologie von 1459-1799*, Berlin: Reimer, 1900, 3 vols.; Th. Kirchhoff, *Deutsche Irrenaerzte*, Berlin: Springer, 1921-1924, 2 vols.; E. Kraepelin, *Hundert Jahre Psychiatrie*, Berlin: Springer, 1918.

[16] Of R. Semelaigne, beside the works mentioned above, *see*: *Les pionniers de la psychiatrie française avant et après Pinel*, Paris: Baillière, 1930-1932, 2 vols.

[17] A. Deutsch, *The Mentally Ill in America*, New York: Doubleday, 1937 (2d ed. 1948); J. K. Hall (ed.), *One Hundred Years of American Psychiatry*, New York: Columbia Univ. Press, 1944; Centennial Anniversary Issue, 1844-1944, *Am. J. Psychiat.*, 1944.

[18] I. V. Kannabikh, *History of Psychiatry*, Moscow, 1928 (in Russian); O. Beyerholm, *Psychiatrens historie*, Copenhagen, Munksgaard, 1937 (in Danish); C. Ferrio, *La psiche e i nervi*. Introduzione storica ad ogni studio di psicologia, neurologia e psichiatria, Torino: Utet, 1948; E. H. Ackerknecht, *Kurze Geschichte der Psychiatrie*, Stuttgart: Enke, 1957 (Engl. tr., 1959).

In the meantime, the period of increasing restlessness and inner discontent of the " fin de siècle," caused by the conflict between individualism and the new ideas of social progress, provoked a rapid fall of Victorian ideals. Tolstoy's emphasis on history as a collective experience replaced Carlyle's idealization of heroes. As is typical of these transitional periods, new ideas had the possibility of rising independently of preconceived patterns. In this case, Freud introduced a new dimension in human psychology, that of the unconscious, thus creating a common frame of reference for normal and pathological phenomena and a basis for individual psychotherapy. From an overall viewpoint, psychoanalysis violently broke with the tradition of psychiatry as an expression of a particular culture, thus disregarding the historical context of psychiatry. To be sure, psychoanalysis was soon to be considered by Freud himself—in his attempt to discover the source of neurotic disturbances—as a genetic-historic method of psychology; but the object of its historical interest was no longer to be searched for outside, but inside, the individual. The individual, rather than the disease, was to become the point of reference of psychoanalysis. Because of his enthusiasm for his new discoveries in the clinical field, as well as of the isolation aggravated by the bitterness of his opponents, Freud assumed an anti-historical position, disregarding the importance of the precursors of his discoveries and, in general, the importance of the prevalent *Zeitgeist*.

Only later, after psychoanalysis had become widely accepted in this country and its basic methodological principles had been influenced both by the biological and by the social orientations of American science, did the pre-Freudian origins and the cultural connections of psychoanalysis start to be investigated. Furthermore, not only psychology, cultural anthropology, and sociology, but even such fields as comparative religion and mythology became influenced by the Freudian and Jungian schools of psychoanalysis. This progressively resulted in a climate favorable to a reformulation of the entire history of psychiatry. It is the indisputable merit of Gregory Zilboorg—and it will remain in the future as the major contribution of this versatile writer—to have based his main work [19] on this new dimension of the unconscious, thus opening new vistas on the history of psychiatry. From this new viewpoint, past attitudes toward mental patients have finally been investigated in their inner motives and have become—often for the first time—understandable.

If we divert for a moment from our chronological outline and consider

[19] G. Zilboorg, *A History of Medical Psychology*, New York: Norton, 1941.

the works of the humanists of the early 16th century, such as Erasmus, Vives, Weyer, and Rabelais, we can clearly see that their works may be considered also in the light of this new approach to the history of psychiatry based on the unconscious. Anyone, even superficially acquainted with the works of these humanists, cannot but be impressed by Erasmus's concern for his comfort or Vives's weakness for the pleasures of his table.[20] Erasmus's " Praise of Folly," beyond the façade of his fine irony, is, in fact, a plea for a man in a state of innocence who accepts and follows his impulses, " who holds nothing human foreign to himself." Turning now to Vives—rightly considered as the father of modern psychology because of his work *De anima et vita* [21]—it is to him that goes the merit of having created the basis for a new outlook toward woman, no longer unconsciously considered as the repository of evil as in witchcraft, but on the contrary as the gentle and intelligent companion of man.[22] Parallel to literature, in the figurative arts, Bosch and Breughel, genuine representatives of that Flemish school of painting which accepted all the aspects of human life including the most sensual ones, were able to throw a momentary light on the irrational and into the depths of the unconscious. I am thinking here especially of Bosch's grotesque and phantasmagoric " Temptation of St. Anthony " and " The Garden of Earthly Delights," a real journey through the depths of the unconscious.[23]

[20] Erasmus's concern for his comfort is especially evident in his correspondence, which reflects more intimately the basic traits of his personality. *See*: J. A. Froude, *Life and Letters of Erasmus*, New York: Scribner's, 1894 (repr. 1927). Vives' weakness for the pleasures of his table has been particularly emphasized by G. Marañon, *Españoles fuera de España*, Buenos Aires: Espasa-Calpe, 1947.

[21] Vives' *De anima et vita* (1538) is considered the first treatise of modern psychology because of its emphasis on the empirical rather than on the metaphysical aspects of the mind. In this book Vives studies how the mind works, not only what the mind is. This empirical position characterizes not only psychology, but all aspects of Vives' philosophy, especially education and moral philosophy. Of the extensive literature on Vives, besides the scholarly introduction by L. Riber to the *Obras completas* (Madrid: Aguilar, 1947), *see* especially: F. de Urmeneta, *La doctrina psicologica y pedagogica de J. L. Vives*, Barcelona: Consejo Superior de Investigaciones Cientificas, 1949; M. Sancipriano, *Il pensiero psicologico e morale di G. L. Vives*, Firenze: Sansoni, 1958.

[22] In spite of the extensive literature on this subject, no major study of the unconscious attitudes toward women throughout the Middle Ages and the Renaissance as represented in witchcraft has yet been made. The point is mentioned in: G. Zilboorg, *The Medical Man and the Witch During the Renaissance*, Baltimore: Johns Hopkins Press, 1935; E. Brouette, "La civilisation chrétienne du XVI siècle devant le problème satanique," in *Satan*, *Etudes carmélitaines*, Bruges: Desclée de Brouwer, 1948. *See* on the position of women in the Middle Ages and the Renaissance, in general: K. Buecher, *Die Frauenfrage im Mittelalter*, Tübingen, 1910, 2nd ed.; E. Schneider, *Das Bild der Frau im Werk des Erasmus von Rotterdam*, (Basler Beiträge zur Geschichtswissenschaft Bd. 55), Basel, Stuttgart: von Helbing & Lichtenbahn, 1955.

[23] On the representation of the unconscious by Hieronimus Bosch (1450-1516): W.

To return to our main outline, while Zilboorg's re-evaluation of the history of psychiatry focuses on the great psychiatrists of the past, Walter Bromberg's recent historical study,[24] the only other attempt so far made in the same line, focuses on psychiatric trends considered in the light of their interplay with social and cultural forces, thus reflecting the point of view of a dynamic psychiatry already influenced by the American pragmatic orientation.

But, no sooner had this approach to the history of psychiatry based on the unconscious crystallized, than new important trends appeared in psychiatry itself. Existentialism, raised on the ruins of Europe in the years immediately following the collapse of its gigantic systems, indicates that it derives its essential meaning from a deep dissatisfaction with historical realities. Aside from Sartre's irreligious speculations and from Heidegger's nihilistic urge, existential philosophy in its most genuine expression, for instance in Kierkegaard, resolves the dialectic of man and God in the individual modes of existence, with a consequent devaluation of history. No matter what role existentialism plays between humanism on one side and historicism on the other, existential psychiatry—especially as viewed by Ludwig Binswanger, its most illustrious representative—has remained so far unconcerned with historical matters.

Although this is not primarily among the aims of this paper, the previous considerations might throw some light on the recently raised question of the relative competence of the medical historian and of the psychiatrist to deal with psychiatric history. Obviously, the medical historian is not too well equipped to deal with the vicissitudes of the unconscious, while the psychiatrist shows more competence in this field. Furthermore, even a superficial review of the literature indicates that the history of psychiatry has been largely the product of psychiatrists, and that medical historians have shown a certain reluctance to deal with the topic. On the other hand, it has to be emphasized that many historical

Fraenger, "Hieronimus Bosch in seiner Auseinandersetzung mit dem Unbewussten," *Du* (*Schweizerische Monatschrift*), Zürich, 1951, 11. 7-18 (especially from the Jungian viewpoint). As a matter of fact, according to the same author (*Das tausendjährige Reich*, Berlin, 1947) Bosch belonged to an occult sect and represented in his paintings the esoteric teaching of symbols and forms which he had learned from this sect. On the demonic aspect of the other paintings of the Flemish school, such as those by Pieter Huys (1519-1581), Dirk Bouts (1420-1475), Hermann Tom Ring (1521-1596), Erhard Schoen (1491-1542), and Pieter Breughel (1525-1569), the best known of them, *see*: E. Castelli (Ed.), *L'umanesimo e il demoniaco nell' arte*, Atti del II Congresso Internazionale di Studi Umanistici, Milano: Bocca, 1953.

[24] W. Bromberg, *Man Above Humanity*, A History of Psychotherapy, Philadelphia: Lippincott, 1954.

studies by psychiatrists lack sound methodology because of deficient critical and historiographic training. There is, therefore, a need for a better reciprocal understanding at this point. The very fact that both psychiatry and medical history are interested in the past and that, historically, they had a common origin from the late 18th century cultural background, should furnish encouragement toward a cooperative effort.[25]

[25] A perusal of the psychiatric literature shows that very little attention has been given so far to the matters discussed above. D. Leigh ("Recurrent themes in the history of psychiatry," *M. Hist.*, 1957, *1*: 237-248) sees four main themes in the development of psychiatry: the first concerned with faith, belief, and disbelief, the second with punishment, the third with aspects of personality, and the fourth with the influence of the mind on the body. The first two are related to religion and the other two to science. Th. Spoerri ("Die historische Betrachtung als Methode für die Psychiatrie," in *Beiträge zur Geschichte der Psychiatrie und Hirnanatomie*, Basel, New York: Karger, 1957, pp. 11-20) emphasizes the importance of historical situations characteristic for every psychiatric advancement, traces the present theories of schizophrenia back to the early 19th century organic, psychological, and spiritualistic trends in psychiatry, stresses that psychiatry belongs to both of Dilthey's categories, "Naturwissenschaft" and "Geisteswissenschaft," because its subject is the total human being, and finally accepts the fact that the basic psychiatric problems—being metaphysical—are perennial and unsolvable. J. Wirsch ("Über Geschichte der Psychiatrie," *ibid.*, pp. 21-40), views the development of psychiatry as the interaction of the two philosophies of psychiatry throughout history: the organic, stemming from Aristotle and, through the scholastics, ending with the brain anatomists, and the psychological, stemming from Plato and, through the animists (Stahl) and the "Psychikern" (Heinroth, Carus, Ideler), resulting in contemporary psychotherapy. W. Leibbrand ("Prolegomena zu einer Geschichte der Psychiatrie," *Imprensa medica* (Lisbon), 1959, *23*, n. 2) is very aware of the complexity of the historical development of psychiatry and traces the origin of the modern psychotherapeutic approach back to the stoic current in ancient philosophy, especially insofar as the theory of affects is concerned. From his thorough review of the psychoanalytic literature, R. de Saussure ("Psychoanalysis and history," in G. Roheim (ed.), *Psychoanalysis and Social Sciences*, vol. 2, New York: Intern. Univ. Press, 1950) finds methodological and theoretical similarities between psychoanalysis and history, both interested in unique events, in contrast to sociology, interested in events susceptible to repetition. In disagreement with the cultural-anthropological orientation, he bases his understanding of society on the characteristics of the individual personality as resulting from the interaction of the child with his family. He makes the interesting comment that French psychiatry of the 18th century before Pinel's reform was characterized by an exaggerated faith in the authority of the earlier authors, by the prevailing interest in general ideas, and by a need to find a rational explanation for every phenomenon, with a consequent disinterest in the apparently irrational manifestations of human behavior, such as mental diseases and criminality. This last point would support the statement made in the present paper concerning the resistance of medical historians to dealing with psychiatry because of the difficulty of translating the complexity of human behavior into clear cut formulas. While the previous considerations on the history of psychiatry all stem from psychiatrists, very little interest in this topic has been shown so far by historians. However, Professor William L. Langer in his presidential address to the American Historical Association of 1957 ("The next assignment," *Am. Hist. Rev.*, 1958, *63*: 283-304) has made a strong plea for a psychological understanding of historical facts and has given in his scholarly

The above-mentioned considerations on existential psychiatry have brought us to the extreme limits of psychiatry, where philosophical issues tend to prevail at the expense of clinical ones. Today, we are much more aware of these limits than in the past, as evidenced by the recent attempts to place the contributions of many authors of the past in the perspective of the *philosophical* tradition of psychiatry. As far as the *organic* tradition of psychiatry is concerned, its great importance in the 19th century, still continuing in our century, has also been mentioned above. The other tradition of psychiatry, the *psychological*, a very recent one still not accepted by many in spite of the progressive integration of many of Freud's formulations into psychiatry, has been particularly emphasized in this paper. In general, however, psychiatric historiography has not yet attacked the problem of the reciprocal interplay of these traditions in the light of cultural history. In other words, the history of psychiatry will have to be conceived not in the narrow sense of the history of events, or of philosophical ideas, but in the more comprehensive sense of cultural history, as beautifully exemplified by Huizinga.[26] Perhaps, when the development of psychiatry is viewed on this background of cultural history, it will acquire new and deeper meaning, and this will result in a better understanding of psychiatry and of its perennial problems.

The data so far available indicate, however, that, more than definite historic forms, one by one subsiding to be respectively replaced by another one, these different traditions of thought seem to be universal attitudes of human beings toward the pathological phenomena of the mind. As such, they will probably persist forever, and thus constitute both a limit and a challenge for the historian of psychiatry, who wants to present the facts in objective terms and yet cannot disregard the importance of the unconscious for the comprehension of many of these facts, nor of the way culture deals with the unconscious. No matter how difficult this task may be, the study of the definition of these universal attitudes in historic terms, still at its beginning, constitutes a fascinating and intriguing subject for the future investigation of the incommensurable aspects of the mind.

paper a few examples of the fruitfulness of this approach, such as the psychology of crowds at the time of the French revolution or the psychological impact of the epidemics of the black death at the time of the Renaissance. It is to be hoped that such an "assignment" will be carried on by other historians.

[26] J. Huizinga, "The task of cultural history," in *Men and Ideas*, New York: Meridian Books, 1959.

G. E. STAHL'S PSYCHOLOGICAL PHYSIOLOGY *

L. J. RATHER **

Although there was much discussion and disagreement concerning the nature of the *psyche* and its relation to the *soma* among philosophers of the ancient world the extreme antithesis between the two which has troubled Western thought since the beginning of the seventeenth century does not seem to have arisen. In Attic Greek, for example, both *psyche* and *soma* can mean "life," and a sharp division between the two was apparently absent. In suitable contexts, it appears, either one can mean "person." Sophocles can make Oedipus refer to himself as "my *psyche*" or "my *soma*," and in either instance he might have said "I."[1] The *psyche* of Democritus, to cite another instance, in keeping with the corpuscular metaphysics which he espoused, consisted of fine, round, smooth, fire atoms whose continual motion was supposed to govern that of the coarser atoms of the *soma*.[2] And Anaximines, in the one sentence of his that survives, called the *psyche* a kind of air (*aer*), related to the spirit (*pneuma*) which embraced the universe.[3] Aristotle, in reviewing the opinions of his predecessors, stated that they had attempted to characterize the *psyche* variously as a motive force, as a principle of cognition, as a single element, or as a mixture of elements, depending on their different philosophical standpoints. Aristotle himself regarded the *psyche* as the constitutive characteristic of the *soma*, its "formula" so to speak.[4] The Aristotelian *psyche* was by no means a disembodied Cartesian "substance." An immanent "form" in the Aristotelian sense, it had, in fact, no reality apart from *soma*. Form and matter did not exist separately in the Aristotelian scheme of things; they could be parted only in thought. In actuality there was neither disembodied form nor "disinformed" matter. The *psyche* and *soma* constitute one whole, just as do a piece of

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[1] E. R. Dodds, *The Greeks and the Irrational*, Boston: Beacon Press, 1957, p. 138.

[2] Aristotle, *On the Soul*, trans. W. S. Hett, (*Loeb Classical Library*) rev. ed., 1957, I, ii, 406b.

[3] H. Diels, *Fragmente der Vorsokratiker*, 7th ed., Berlin: Weidmann, 1954-1956, ch. 13, fragment 2.

[4] Aristotle, *op. cit.* II, i, 412a.

wax and the impress given it by a stamp.[5] A similar point of view was adopted by medieval thinkers who stood within the Aristotelian-Thomistic tradition.[6]

The thesis I wish to set forth here is that the rise in the seventeenth century of a strict dualism of *res extensa* and *res cogitans*, of *psyche* and *soma*, mind and body, matter and spirit—whatever we choose to call it—together with the revival of the ancient corpuscular philosophy and the development of Galilean mechanics, posed a critical problem for medical theoreticians as well as philosophers. The alternative answers were immediately sketched out, but the problem itself still concerns us to-day in one way or another. The reflection in medical thought of the more general philosophical dispute appeared in the closely related antitheses of mechanism vs. vitalism, and of purely psychological vs. purely somatic medicine. The iatromechanists and the mechanistic physiologists made their appearance in this century, and so did Stahl, leader of the Animists. It is Stahl's response to the problem which I wish to discuss here. No attempt will be made to deal with all aspects of the above thesis.[7]

Georg Ernst Stahl was born in Anspach in 1659,[8] sixteen years after the birth of Isaac Newton and seventeen years after the death of Galileo. Galileo's *Dialogues on Two New Sciences* had been published in 1638, René Descartes' *Discourse on Method* in 1637, and his *Meditations* in 1638. Cartesian dualism and the various solutions to the problem it had generated occupied a place of central importance in philosophical disputes. The attempt to comprehend living organisms as machines—a unique endeavor in the history of human thought—had just begun, and the rejection

[5] *Ibid.*, 412b.

[6] It is true that the mode of union of soul and body was an insoluble problem for theologians and philosophers who were influenced by Augustinian dualism. However, as Windelband has pointed out, this was before the monistic metaphysical psychology of the Peripatetic school was well-known in Europe. Cf. W. Windelband, *A History of Philosophy*, trans. James Tufts, New York: Harper, 1958, p. 303 *et seq.*, and E. Gilson, *History of Christian Philosophy in the Middle Ages*, New York: Random House, 1955, pp. 74 *et seq.*

[7] An extended treatment of the philosophical aspects of this thesis will be found in Heinz Heimsoeth's *Die sechs grossen Themen der abendländischen Metaphysik*, 3te Aufl., Stuttgart: Kohlhammer, 1954. Hugo Ribbert's *Die Lehren vom Wesen der Krankheiten*, Bonn: Cohen, 1899, contains a section on medical dynamism which offers some support for the view I am proposing in this paper.

[8] Bernward Josef Gottlieb, *Bedeutung und Auswirkungen des Hallischen Professors und Kgl. Preuss. Leibarztes Georg Ernst Stahl auf den Vitalismus des XVIII Jahrhunderts, insbesondere auf die Schule von Montpellier*, *Nova Acta Leopoldina*, N. F., Bd. 12, Nr. 89, Halle: 1943. I wish to express my indebtedness to Gottlieb's detailed study of Stahl.

of teleology was well under way. The world-picture was undergoing progressive mechanization. So, likewise, was the picture of man. Harvey's treatment of the circulation can be regarded as part of a movement aiming at the extrusion of all vitalistic, pneumatological, and teleological doctrines from physiology and medicine, just as Galileo's theories were part of a parallel movement in physics.[9] It was in this intellectual climate that Stahl reached maturity. He studied in Jena and became a doctor of medicine in 1684. In 1687 he was invited to Weimar as personal physician to Duke Johann Ernst. Seven years later, owing to the good offices of Friedrich Hoffmann, he was given a chair in Medicine at Halle, which he held until 1715. In that year he was called to Berlin as personal physician to Friedrich Wilhelm I. In addition he served as president of the Prussian *Collegium Medicum* from 1715 until his death in 1734. Throughout his long life, as Sprengel wrote, he never lacked epithets when there was occasion to speak of the "mechanical philosophers."[10] But before discussing Stahl's system of medicine and physiology it is necessary to indicate the sense in which medicine before the seventeenth century was "psychosomatically" oriented, even though—or, rather, because—the psychosomatic problem in its modern form had not arisen. Attention must be directed to Galenical medicine, since it was the basis of theory and practice throughout Europe. Revolts against the tradition started in the sixteenth century with Paracelsus and Van Helmont. Neither can be said to have founded a school, however, and the holding power of traditional medicine proved to be very great. In view of their "spiritualistic" doctrines both Paracelsus and Van Helmont have been regarded as forerunners of Stahl. But the philosophical aspects of the mind-body problem had not in their time been defined in the new form, at least not to the extent of giving rise to repercussions in medical thought.

The teleological and vitalistic aspects of Galenical medicine and physiology are too well known to require detailed comment. While there were none who called themselves mechanists in Galen's day nor—in spite of the considerable information about automatons then available[11]—

[9] This is not to say that Harvey was anti-Aristotelian and anti-Galenistic. Cf. L. J. Rather, "Harvey, Virchow, Bernard and the Methodology of Science," in *Disease, Life and Man*, Selected Essays by Rudolf Virchow, trans., introd. L. J. Rather, Stanford: Stanford Univ. Press, 1958; also J. F. Payne, *Harvey and Galen* (Harveian Oration 1896) London: Frowde, 1897. Payne writes that Harvey, in spite of Copernicus and Galileo, was still living under an Aristotelian heaven and remained a staunch Peripatetic till the end of his life.

[10] Kurt Sprengel, *Versuch einer pragmatischen Geschichte der Arzneykunde*, Halle: Gebauer, 3rd ed., 1821-1828. Vol. 5, 1828, p. 298.

[11] Cf. Lynn Thorndike, *A History of Magic and Experimental Science*, New York:

was the analogy between living beings and machines cultivated, there were some adherents of the corpuscular theory who, like their counterparts in the seventeenth century, were skeptical of "ends" and "purposes" in Nature. There were two factions in medicine and philosophy in the second century, according to Galen, one holding that all substance (*ousia*) was continuous and susceptible of alteration, the other that substance consisted of unchangeable, unalterable particles separated by empty space.[12] Anyone who can appreciate the logical consequences of an hypothesis, Galen added, will see that from the latter standpoint it follows that there is no substance or faculty (*dynamis*) peculiar to *physis* or the *psyche*, and that both result from the way in which the primary corpuscles (*somata*) come together. They will inevitably hold that the *psyche* has no innate ideas, that all such things arise in us from sensation and that animals are steered by images and memories. There are those who go even further and state that the *psyche* has no reasoning faculty at all; we are led like cattle by the impressions of our senses and are unable to refuse or dissent from anything. They say that courage, wisdom, temperance, and self-control are all mere nonsense. Nor do we love each other or our offspring, and the gods care nothing for us.[13] These views, of course, Galen violently rejects.

Galen's eclecticism derives from Hippocratic medicine, Aristotelian philosophy, Stoic pneumatism, and the medical doctrines of the Pneumatic School. The *pneuma psychikon* (animal spirits), *pneuma zootikon* (vital spirits) and *pneuma physikon* (natural spirits) of Galenical physiology were, from the modern point of view, neither completely material nor completely spiritual. Following the Stoics and Aristotle, he probably considered the *pneuma* to be a material substance. The distinction between the material and the spiritual, however, had not yet been sharply formulated.[14] The relationships between *psyche*, *soma*, and *pneuma* in ancient thought are exceedingly complex, and no attempt will be made to

Macmillan, vol. I, 1923, pp. 187 *et seq.* Theodor Meyer-Steineg makes Galen seem rather like a nineteenth century vitalist in a quarrel with mechanists, but this is probably an anachronism (*Ein Tag im Leben des Galen*, Jena: Diederichs, 1913).

[12] Galen, *On the Natural Faculties*, trans. A. J. Brock (*Loeb Classical Library*), I, xii.

[13] *Ibid.*

[14] Tertullian, Galen's contemporary, in an interesting passage calls earth and fire "corporeal" (*corporalis*), but malignity and benignity "incorporeal," where we would call the one corporeal and the other abstract. He regards the soul as corporeal, for how could a void move a solid?—and calls on the high medical authority of Soranus to defend the corporeality of the soul. For a detailed discussion of Tertullian's chief source, the four lost books on the *psyche* written by Soranus, *see Tertullianus De anima*, ed., introd., commentary J. H. Waszink, Amsterdam: Meulenhoff, 1947.

elucidate them here.[15] We know that Galen distinguished *psyche* from *physis*, ascribing feeling and voluntary motion to the former and growth and nutrition to the latter, but he by no means regarded the two as polar opposites.[16] If we turn to his two studies on the effect of the emotions on the pulse we see that he was not aware of a " mind-body problem " here—and Galen would not have overlooked such a problem had it then existed. He does, however, state that some physicians fail to appreciate how much the *soma* suffers from affections of the psyche.[17] Again, in the treatise *Quod animi mores corporis temperamenta sequantur*, Galen rejects the Platonic doctrine of an incorporeal *psyche* on the ground that the *psyche* is obviously influenced by bodily states, by age, dietary regime, and climate. Such effects are understandable only if the *psyche* is a manner of being of the body, rather than some kind of superior essence. Galen regards the *psyche* as a manifestation of the mixture of elements and their qualities which constitute the *soma*. The *psyche* is in fact equated with the temperament of the *soma*, and disembodied " powers " are explicitly denied.[18] It follows then, that the present day tension between mind and body in medical thought is absent from Galenical medicine.

[15] Cf. W. W. Jaeger, "Das Pneuma in Lykeion," *Hermes*, 1913, *48*: 29. He writes: "Kaum eine andere Lehre, welche die Philosophie aus der medizinischen Physiologie gezogen hat, wurde fuer diese Alliance ein staerkeres Bindeglied, aber auch keine fuer die rationale Psychologie, den Pan-Psychismus und die ganze Wissenschaft . . . so fatal wie die vom Pneuma. Aus dem religioesen Vorstellungsnebel gewisser Volksschichten und aus der Orphik aufsteigend, okkupirte diese Anschauung das Gebiet der aelteren Medicin mindestens seit Empedokles, bei dem ein reiner Forschergeist und die Phantastik der kathartischen Religion in einem Hirn beisammen wohnten. Sie griff in die Philosophie hinueber, am staerksten in die Psychologie des Diogenes, Demokrit, Aristoteles, Theophrast, ward dann durch die Stoa zum Weltprincip und zur allesdurchdringenden Gottheit erhoben, um durch die Verbindung hellenistischer Popularphilosophie mit dem Aberglauben der Menge endlich wieder in die dumpfe Sphaere der sakramentalen Spekulation und der Konventikelreligionen des hellenistischen Vorderorients hinabzusinken, aus der erst die lebensvolle Deutung des Paulus von Tarsos sie wieder hervorzog und ihrer weltgeschichtlichen Zukunft im Trinitaetsdogma der Christen entgegenfuehrte. So vollendete sie ihren historischen Kreislauf. Pneuma bei Empedokles, bei den Aerzten der sikelischen Schule, oder bei den Koern, bei Platon, Aristoteles, Chrysipp, bei Athenaios von Attalia, bei Philon, Paulus, Origenes, Basilius markirt ebensoviele verschiedene Etappen der Geistesgeschichte, und doch laesst sich die Continuitaet der Entwicklung nicht bestreiten."

[16] Galen, *op. cit.* I, i. Brock states (p. 133) that Galen tends to biologize physics or physicize biology, whichever way we prefer to look at it. The same might be said of Aristotle and, in our own time, of Whitehead.

[17] C. G. Kuehn, *Claudii Galeni Opera omnia*, Leipzig: Cnobloch, 1821-1833, vol. XIV, pp. 631-634. Galen states, "Ego sane puto, eo quod nullam habent cognitionem eorum, quae corpus (*soma*) propter animi (*psyche*) affectus pati consuevit."

[18] *Ibid.*, vol. IV, pp. 767-822. Cf. *Oeuvres de Galien*, trans. C. Daremberg, Paris:

If we are to understand Stahl's place in the history of medical thought, we must picture him against a background of declining Galenism, rising mechanical philosophy, and a reinvigorated and flourishing corpuscular theory now linked with mathematical analysis—against a background of attempts to banish final causes in favor of blind chance and to transform "nature," the *physis* of the Greeks, from organism into mechanism. This was the predominant intellectual current of the time. But Stahl's motto was: *E rebus quantumcunque dubiis quicquid maxima sentientium turba defendit error est.*[19] To a considerable extent his polemics against the medical followers of the mechanical philosophers recall Galen's attacks on the adherents of Democritean atomism, notably on the medical school of Asclepiades. After fifteen hundred years of slow upward movement a corresponding point on the spiral of medical thought had been reached and the debate began once again on another level.

The first section of Stahl's *Theoria medica vera* is a disquisition on the differences between mechanisms and organisms. Stahl does not deny that organisms have features in common with machines, but he does object to the belief that the corpuscular theory and the rule of blind chance can ever account for the goal-directed behavior of living creatures. We must bear in mind that the four Aristotelian *aitia*, which later became the material, formal, efficient, and final causes of medieval philosophers, had been pared down to the material and the efficient by the mechanists of Stahl's day. A change in the idea of "matter," which had been transformed into something capable of separate existence as *res extensa*, as "unformed" matter, had shifted it from a causal to an ontological category. This left only the efficient cause. But here again, the dualistic mode of thinking had transformed efficient causes into forces acting on material particles in accordance with mathematical laws, whereas the Aristotelian third cause was as much "psychological" as it was "physical"; it was a "motive" as well as a motivating force in the purely physical sense.[20] Stahl saw that the operation of chance alone would determine the state

Baillière, vol. I, 1854, pp. 47-91: "Que les moeurs de l'âme sont la conséquence des tempéraments du corps." Galen's position is hylozoistic rather than materialistic.

[19] *Georg. Ern. Stahlii Theoria medica vera*, ed., L. Choulant, Lipsiae: *sumpt.* L. Vossii, 1831-1833. Vol. I, "Physiologia," pp. x-xi. A partial translation into German (*Georg Ernst Stahl's Theorie der Heilkunde*, by K. W. Ideler, Berlin: Enslin, 1831-1832) is available, and I have relied on it heavily. Ideler commented on the difficulties offered by Stahl's prolix, heavy, outmoded Latin style and thought the only explanation lay in the power and fullness of Stahl's thoughts and his eagerness to give them expression. An introductory chapter omitted by Choulant is included by Ideler.

[20] Aristotle, *Physica*, trans. Hardie and Gaye, Oxford: Clarendon Press, 1930, Bk. II, 194b, 29-32; "Again the primary source of the change or coming to rest; e. g. the man

of a mechanical system after the rejection of final causes. The only possible answer to the problem posed by the apparent order of the universe, or parts of it, would then be: such is the case. Two conceptions of the ancients, he wrote, chance (*casus*) and fate (*fatum*) indicate their awareness of a series of events directed toward a definite end as distinguished from a series of events taking place without any end in view. In recent times, he continued, when the principles of Democritus and Epicurus had been re-introduced and further developed, this distinction must once again be insisted upon. Adherents of the corpuscular theory either tried to eliminate purposes entirely or fell into the absurdity of holding that the all embracing order of the universe was a matter of chance and necessity at one and the same time.[21]

Stahl believed that clarification of the distinction between machines and organisms was needed as well as a more precise definition of both. The terms "mechanism," "machine," and "mechanical force" had been in use since ancient times, he wrote, and it was generally agreed that form, size, position, and motion were properly mechanical categories. What was lacking was any consideration of the manner in which motive forces were related to each other so as to bring about the attainment of specific goals.[23] No one would deny that a mechanical arrangement was a necessary feature of every organism, but it was necessary to bear in mind as well the manner in which pure mechanism was subordinated to organismic ends. The characteristics and relationships of the mechanical arrangements should be considered in the light of the purposes they implied. The "material" arrangement of a mechanism expressed only a general relationship, but the "formal" arrangement determined specific use and purpose.[22]

To illustrate his point Stahl writes that a clock, though its maker may have provided it with elaborate mechanical fittings in order that it may tell time properly, remains a mere machine as long as it is not synchronized with the movement of the sun. If damaged by an unskilful hand it will cease to be a useful instrument (*organon*), although it may remain a machine driven on aimlessly by the elasticity of its spring.[24] Thus in his own way Stahl carried the mechanistic analogy further than did his opponents, for he pointed out that the machines with which we are actu-

who gave advice is a cause, the father is the cause of the child, and generally what makes of what is made and what causes change of what is changed."

[21] Stahl (Ideler) *op. cit.*, pp. 6-8; (Choulant) *op. cit.*, pp. 13-15.

[23] Stahl (Ideler) *op. cit.*, p. 10; (Choulant) *op. cit.*, pp. 17, 18.

[22] Stahl (Ideler) *op. cit.*, p. 12; (Choulant) *op. cit.*, pp. 20, 21.

[24] Stahl (Ideler) *op. cit.*, p. 13; (Choulant) *op. cit.*, pp. 22, 23.

ally familiar are always designed for specific purposes, and that without a consideration of these purposes they are meaningless. Although we must be careful to set limits to our search for the purposes of things, said Stahl, since the latter are often inaccessible, we cannot neglect the teleological viewpoint with respect to the bodily organs and their functions. We must regard the sense organs as organs for sensation, the muscles for movement, the tongue for speaking, and so on, simply in order to understand them.[25]

The modern philosophers who regard the human body as an *automaton*, continues Stahl, admit that its individual parts have a purpose in relation to the whole. The question to be considered is whether the human body, as such, can exist or have relation to any ends, on its own account. Although the material substrate of the body inclines toward a rapid and complete dissolution, yet we observe that it maintains its integrity during life. We can only conceive of this as the effect of an immaterial force related to movement. There is no basis for the existence of such a thing as the human body and its manifold activities unless we bring it in relation to something else. This "something else" is Stahl's *anima*.[26] Here the influence of Cartesian dualism on Stahl becomes evident.

The *anima* is active to the same degree that matter is passive. It is an *ens movens* in a double sense: not only with respect to the passive mechanism of the body, but also with respect to its own intuition as it moves from one object to another. For this reason Aristotle called thought a perambulation of the *psyche*. The *anima* is an *ens intelligens* created not only to understand, but to act on, a multiplicity of objects, hence it requires organs of sense and movement in order to act in a corporeal world. The

[25] Stahl (Ideler) *op. cit.*, pp. 13-15; (Choulant) *op. cit.*, pp. 23-25. Stahl seems to be approaching the position later taken by Kant, who rejected both the pure teleology of Aristotelian biology and the pure mechanism of Spinozistic and Cartesian biology. For the former, teleology was a category of cause, while for the latter it was an anthropomorphic intrusion. Kant shifted the locus of the question by his emphasis on "things in themselves" which could never be known (i. e. that a metaphysics of nature was impossible of achievement); therefore, the problem of causality versus purpose was simply a question of whether these two principles were contradictory, as far as the organization of our *knowledge* of *phenomena* was concerned. He argued that there was no such contradiction, that the causal category was applicable to temporal series of events and was a genuine explanatory principle. On the other hand the concept of purpose was irreplaceable for understanding our *knowledge* of those structured objects called living organisms. No mysterious force is involved in this conception of the applicability of purposive ideas to biology. Cf. Ernst Cassirer, *The Problem of Knowledge*, New Haven: Yale Univ. Press, 1950; and Immanuel Kant, *Critique of Judgment*, trans. J. H. Bernard, New York: Hafner, 1951.

[26] Stahl (Ideler) *op. cit.*, pp. 19, 20; (Choulant) *op. cit.*, p. 35.

sense organs must be adapted to the reception of their corresponding objects, but this alone does not suffice for reception, e.g. when our attention is elsewhere, we may be unaware of a very loud noise. On the other hand the *anima* can make use of the sense organs at will.[27]

Stahl deals rather shortly with the problem of the relation of the *anima* to the human body. The absolute disparity of Descartes' *res extensa* and *res cogitans* had made it almost inconceivable that mind or soul could act on body. Descartes himself never solved the problem—which is understandable, since it is clearly insoluble given his starting point—and his initial attempt to do so was adversely criticized by Leibniz, among others.[28] Stahl outlined the alternatives as follows: either the *anima* has as a complement to its power of understanding things a body precisely adapted to the carrying out of its aims, or the *anima* is the ineffectual companion of a pure machine which obeys its own laws. In the second case the sense organs would transmit their impressions to the locomotor system, and movement would come about willy-nilly in a purely mechanical fashion, the *anima* being a pure observer. But how absurd this is!, continues Stahl: when a miser hears the fall of a coin and creeps under every bench and table in search of it, tireless and not to be diverted until he has found it, are we to suppose that all of this is the effect of certain particles which enter the ear and are transmitted to the muscles?[29] After a graphic description of the flight of doves from their cotes—passing over great distances in search of food, wheeling, turning, and mingling with thousands of others, yet unerringly finding their way back to their own villages once again—Stahl attempts to demonstrate the futility of a corpuscular and mechanistic analysis of such phenomena.[30] No one, he concludes, should fail to see that the *anima* can not only arouse and sustain voluntary motion, but control its magnitude and direction as well.[31]

Stahl held that movement (*motus*) was a physical phenomenon, while direction (*directio*) was abstract, metaphysical, and a fiction of the mind. Movement without direction was inconceivable. To suppose that the

[27] Stahl (Ideler) *op. cit.*, p. 21; (Choulant) *op. cit.*, pp. 36, 37.

[28] Leibniz, "Considérations sur le principe de vie," *Opera*, ed. Dutens, vol. II, pt. 1, p. 39, reprinted in *Opera philosophica*, Aalen: Scientia, 1959. Descartes had suggested that *mens* or *animus*, while incapable of altering the quantity of motion in the corporeal world, might influence its direction through the action of the animal spirits. Leibniz, however, showed that Descartes had misunderstood the law of conservation of force or energy which, rightly understood, involved conservation of direction as well. Thus there was no way in which a non-physical power could directly affect a physical system.

[29] Stahl (Ideler) *op. cit.*, pp. 22, 23; (Choulant) *op. cit.*, pp. 39, 40.

[30] Stahl (Choulant) *op. cit.*, pp. 40, 41.

[31] Stahl (Ideler) *op. cit.*, p. 23; (Choulant) *op. cit.*, p. 41.

anima could influence direction without influencing motion was to confuse physical with metaphysical categories.[32] All movement in the body, according to Stahl, derived from the energy of the *anima*. Movement, although a physical phenomenon, was incorporeal. But, when considered in abstraction from what is moving, it becomes a metaphysical rather than a physical entity. We must therefore, according to Stahl, suppose that there exists a substantial moving power in certain physical entities of the kind which we customarily designate as "animated." The action of the *anima* on the body is most evident in states of rage, fear, and joy, when the heart, pulse, circulation of the blood, and the remainder of the body as well, are profoundly altered.[33] Stahl's account of motion as "incorporeal" and therefore capable of linking the *anima* with the body is by no means clearly formulated. Perhaps we should not expect a precise philosophical analysis from him, however, since his interests were not primarily philosophical but medical.

Stahl's final assertion regarding the *anima* bears on the question of conscious and unconscious activities. We must not suppose that the *anima* has no control over bodily activities simply because they do not rise to the level of consciousness. Admittedly, this lends such activities a different character. But even in the case of activities of a kind where there can be no doubt whatsoever that intelligence and calculation are involved—such as the estimate of the amount of effort required to spring over a ditch—much takes place without the mind's awareness. The ancients expressed this as the distinction of *logos* from *logismos*, of *ratio* from *ratiocinatio*.[34]

This brief exposition of the salient characteristics and activities of the

[32] Stahl (Ideler) *op. cit.*, p. 24; (Choulant) *op. cit.*, pp. 41, 42.

[33] Stahl (Ideler), *op. cit.*, pp. 25, 26; (Choulant) *op. cit.*, pp. 43-46. Stahl adds that the ancients called this power the *physis*, and that the word *physeche* is sometimes used as the poetic equivalent of *psyche*; he suggests that *physeche* came to be pronounced *psyche* by assimilation of sounds, in short, that *psyche* is derived from *physis* rather than from *psycho* (cold). This is in keeping with Stahl's attempt to fuse the many hierarchical levels of previous writers into the single conception of the *anima*. Other effects of the *anima* are cited elsewhere. The dependence of the appetite on the *anima* is shown by the power of the imagination to conjure up nauseating images capable of suppressing a healthy appetite and replacing it by nausea or aversion to food. Terror, grief, fear, and anxiety may have the same effect (Stahl [Ideler] *op. cit.*, p. 209; [Choulant] *op. cit.*, p. 394). Mechanistic thinkers have attempted to explain the flow of saliva as the result of mechanical pressure exerted on the salivary glands during chewing. But what is more obvious, comments Stahl, than that the mere sight or propinquity of savory food will cause saliva to flow? On the other hand, the chewing of distasteful foods may be accompanied by the flow of so little saliva that swallowing may be difficult (Stahl [Ideler] *op. cit.*, pp. 210, 211; [Choulant] *op. cit.*, p. 399).

[34] Stahl (Ideler) *op. cit.*, p. 27; (Choulant) *op. cit.*, p. 47.

Stahlian *anima* sufficiently exposes the complexity of his conception. A few remarks concerning the term he chose may be of interest. In classical Latin *anima* designates life, the vital principle, the emotional soul, in opposition to the *animus*, which is the thinking being or rational soul. Some writers, however, oppose *animus* to *mens*, in which case *animus* becomes the desiring, feeling soul, and *mens* the higher rational faculty. The Greek term *psyche* is sometimes translated as *anima*, sometimes as *animus*. Both early and medieval Christian writers customarily use *anima* in translating the Greek of the New Testament, and this in turn appears in English as "soul." The problem of nomenclature is further complicated by the various hierarchical levels of the *psyche* in Plato and Aristotle, and by the problem of the position and hierarchical stratification of the *pneuma* in early, and of *archei*, "life-principles" and "vital forces" in later, philosophical and medical writers. To clarify the genetic and conceptual relationships among Stahl's *anima*, the Hippocratic *physis*, the Platonic *psyche*, the Aristotelian *psyche*, the material *anima* of Tertullian, the spiritual *anima* of Augustine, and the Cartesian *mens*—for which Descartes' sometimes substitutes the term *animus*—would be interesting but would require a small treatise. Stahl's *anima*, however, is immaterial, regulative, and motive. It is both consciously and unconsciously rational. It embraces the Hippocratic *physis* and *vis medicatrix naturae*. The intermediate entities of Aristotelian psychology and the various *archei* of Paracelsus and Van Helmont disappear, and the human being becomes a *corpus* sustained, moved, and governed by an *anima*.

Mandon, in his study of Van Helmont, pointed out that Stahl had given the *anima* the role of a god in a machine and had allowed for no substantial relation between spirit and matter, leaving unbridged the chasm between the two excavated by Descartes.[85] Pagel, too, writes that Stahl's *anima* lumped together reason, instinct, the *anima sensitiva*, and the various *archei*, obliterating the distinctions insisted on by Van Helmont.[86] But Van Helmont belongs to the pre-Cartesian era. Once the strict dualism of Descartes' categories of *res extensa* and *res cogitans* have been accepted, the "chasm" cannot be bridged over. All possible bridges have been burned in advance, since the presuppositions of Descartes' system forbid any connection. Hence the intermediate entities lose their *raison d'être*. Stahl, of course, was as little able as was Descartes to find a satisfactory connection—as little able, indeed, as anyone is to-day, provided he starts from the same position.

[85] J. A. Mandon, *J. B. Van Helmont*, Paris: Baillière, 1868.
[86] W. Pagel, "Helmont, Leibniz, Stahl," *Arch. f. Gesch. d. Med.*, 1931, *24*: 19.

Stahl's defense of teleological thinking requires some additional comment. Final causes or purposes are not to be construed as proper substitutes for efficient causes. But they may serve to direct our attention toward the significance of the combined and orderly operation of efficient causes. From this point of view the purpose of a reflex seems as legitimate an object of investigation as the purpose of the coloring of an insect or blossom. The reflex cannot really be intelligible to the physiologist until he knows its aim, as Sherrington has written.[37] From one point of view, with respect to the antithesis between teleological and mechanistic ways of thought, it is of secondary importance whether we ascribe "purpose" to a set of events taking place in the world of nature, but of primary importance that we do not shy away from such occurrences simply because we are unable to give them a place in a purely mechanistic (however "mechanism" is construed) scheme. The first commandment of science is to "save the phenomena." While it may be true that overeagerness to accept teleological explanations of natural phenomena diverts attention from a mechanistic analysis in terms of efficient causes, it is also true that a blind commitment to mechanistic analysis as it stands at any given time may limit our attention to a segment of natural phenomena, namely, to those fitting most easily into the scheme.

Stahl, whom Cabanis[38] hailed as the greatest man of his profession since Hippocrates, called attention to the purposeful self-regulatory characteristics of living organisms, features which were slighted or overlooked entirely by the mechanistic analysts of his own and later times.[39] He called attention once again to the importance of psychological factors in medicine and his message has from time to time appealed forcefully to psychiatrists in the "psychological" camp.[40] Stahl also championed an idea of

[37] C. S. Sherrington, *Integrative Action of the Nervous System*, New Haven: Yale Univ. Press, 1911, p. 235.

[38] P. J. G. Cabanis, *Sketch of the Revolutions of Medical Science*, trans. A. Henderson, London: Johnson, 1806.

[39] Virchow gives Stahl due credit here. The concept of "life" had been pushed into the background during the era of the old humoral pathology, he wrote. Hippocrates and his followers were content to speak briefly of *physis* or Nature, without attempting to clarify the idea. Paracelsus first sought to define the relation of *physis* to life and drew attention to the individual life of the parts. Stahl put aside some of the mysticism of Paracelsus and Van Helmont and made the *anima* a forming, moving, and healing principle. Virchow, like most Germans, regarded Stahl as the founder of the vitalistic school of Montpellier ("Hundert Jahre allgemeiner Pathologie," *Festschrift zur 100 jährigen Stiftungsfeier des medizinisch-chirurgischen Friedrich-Wilhelms-Instituts*, Berlin: Hirschwald, 1895. Cf. *Disease, Life, and Man*, Selected Essays of Rudolf Virchow, *op. cit.*, pp. 174, 175).

[40] Stahl's translator, Karl Wilhelm Ideler, chief physician at the Charité Division for

the nature of disease which has become a commonplace in our own time. Putting his conception in modern terms, disease is a reaction to injury on the part of a homeostatic organism. Stahl was quite aware of the originality of his outlook. His theory, he wrote, was precisely the opposite of the *Schulbegriffe* of ancient and modern times. For no greater contradiction could be conceived than that arising when all pathological manifestations in the body were regarded on the one hand as the disease in question, and on the other hand as measures taken *against* the disease and its noxious causative agent.[41]

the Insane, wrote that psychotherapy was like a twig torn off, planted in an artificial medium, and unable to bear fruit, since all the newer medical theories regarded the introduction of psychological principles into medicine as the intrusion of metaphysics into the realm of experience. Stahl, wrote Ideler, did not develop his doctrines to a point where they could serve as a foundation for psychiatry, but he did show in a lively fashion the influence of emotional conditions on life activity (Ideler, *op. cit.*, p. XIII *et seq.*)

[41] Stahl (Ideler) *op. cit.*, p. LIX.

REFLECTIONS ON HISTORICAL EPOCHS IN MEDICAL EDUCATION *

IAGO GALDSTON

Medical historians, notably those who have written comprehensively on the history of medicine, have concerned themselves primarily with the development of the science of medicine. Relatively little attention has been paid to medical practice, and even less to the teaching of medicine. It is not that these subjects have been entirely neglected, but rather that much of what has been written thereon, was either incidental to the story of the progress of the science of medicine or appeared as isolated episodic contributions.

There is in fact a wealth of information available on both the teaching and the practice of medicine, but it is widely scattered. A good deal is to be found in the voluminous biographical and autobiographical literature. These sources, however, proffer only crude and uncritical data. Another and in some respects superior source of historical data, is to be found in the institutional histories of universities, hospitals, and medical schools. A splendid miscellany of data bearing on both the teaching and the practice of medicine is to be found in the writings of Charles H. Haskins, Lynn Thorndike, Stephen d'Irsay, and other mediaevalists and historians. There is then no dearth of material for a definitive history of the teaching of medicine, and yet, with but one or two exceptions, the subject has been dealt with not definitively but only coincidentally. I am, of course, cognizant of Puschmann's excellent work on Medical Education, and I would deem him, in a measure, an exception to my generalization. I cannot, however, set him entirely apart, for he, no less than the others, wrote under the sway of a persuasion which I intend to describe and to challenge.

What is the nature of this persuasion? It is this: that historically the practice and the teaching of medicine are direct derivatives of the science of medicine. As the one progressed, so did the others. In a schematized

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pattern, it were as if there cascaded down from the mainspring of scientific insight and knowledge a stream of influence which shaped and determined initially the teaching of medicine and, secondarily, the practice of medicine.

I can anticipate in the wake of this affirmation the challenging query "Well, isn't that really the case? Haven't we seen, these past few decades, by how much new developments in the science of medicine have perforce and profoundly reshaped both the teaching and the practice of medicine?"

I would agree that such indeed has been the case. I would also qualify this by pointing out that not all recent developments in the science of medicine, psychiatry and nutrition, for example, have been adequately incorporated in the medical curriculum. There is, it would appear, a bias operative in the election of *which* new developments will be accented in the changed curriculum. But, more pointedly, I would argue that what we have experienced, intensively, during the last thirty years, and less sensibly and urgently during the past 200 years, is not representative of the larger historical experience. We are, in effect, passing through a singular epoch in the history of medical education, an epoch in which medicine is dominated by the laboratory, rather than by the sick bed.

In this affirmation there is implicated the broader thought that the history of medical education is divisible into distinctive epochs,—and also the novel postulate that medical education is *not* a derivative of the *science* of medicine but rather mirrors the biases, the particular interests, and the preoccupations of those who teach medicine.

In this perspective it is to be seen that the teachers of medicine not only shape medical education, but also bias the direction in which the science of medicine is pursued. This no doubt explains, in part at least, why the medical innovators, especially when their innovations fall outside the domains of the established schools, or challenge some of their cherished tenets—Paracelsus, Harvey, Semmelweis, Pasteur, Pettenkofer, Freud—encounter so much hostility and opposition. If then the teachers of medicine and, in terms of the present I intend the formal staffs of the medical schools, do wield so much power, then, though I would be hard put to describe just who they might be, it behooves the statesmen in medicine to be mindful of who is privileged to teach medicine, and of the criteria by which they are selected.

This, however, is more in the nature of a conclusion than of an exposition, and I must return to the further pursuit of my thesis, which, stated briefly, postulates the following: that the history of medical education is not embraced in, nor faithfully mirrored in, the history of the growth

and development of the science of medicine; that medical education has its own and singular history; that this history is divisible into distinctive epochs; and finally that the distinctive characteristics and dynamics of a given period in medical education deeply influence the contemporaneous practice of medicine, and bias the direction in which the science of medicine is likely to progress. Needless to say, in the time allotted me, it will not be possible to elaborate on each of the components of my thesis. I will in fact restrict my presentation to a delineation of some distinctive epochs in the history of medical education.

Who, in medicine, taught whom, when, where, and how, is the burden of this inquiry. Of the more ancient times, those anterior to written history, we can only venture guesses and conjectures, based chiefly on suggestive anthropological data. That Medicine is as old as mankind, seems a warranted assumption. " Disease in some form," wrote William Caudill, " is one of the fundamental vital problems facing every society, and every known society has developed methods for coping with disease and thus created a medicine." [1] Man came into being as a social animal. He experienced and was cognizant of injury and disease. Among the earliest of men there were no doubt some individuals, older, more acute and astute, observant and venturesome, who served their fellow men in the ways of a prototype physician. Who taught this early physician? How did he gain his education? His school and his master were one and the same—to wit, experience. Initially there were no other schools and no other teachers but experience.

Among the numerous cave paintings, rock gravings, and sculptures that have been discovered and studied, none pictures or suggests a medical scene. Forty thousand years ago there seemingly existed a lore of hunting, and some rites and mysteries of magic, but no cogent body of common medical lore. This is not surprising for mankind during the long dawn of civilization was nomadic and derived its nurture by food gathering and hunting. Such existence was too mobile to favor the cumulative growth of a transmissible culture of medicine. Only when man reached the stage of agriculture did the circumstances of his existence favor the emergence of a medicine which we can count as the prototype of our own discipline.

The development of agriculture and the domestication of animals involved the immobilization of the population and the building of permanent homes and shelters. Time and energy were set free for exploring the possibilities of nature. Discoveries and inventions of far-reaching im-

[1] William Caudill: *Anthropology Today*. Chicago: Univ. of Chicago Press, 1953, p. 772.

portance such as metallurgy, pottery, and above all writing, followed soon after the first adoption of agricultural life. Social and religious changes also followed. Fertility rites now formed the chief basis of religion. The scattered groups of independent food gatherers were thus firmly bound together under the authority of a *priest-king*. It is seemingly from the institution of *priest-king* that the Shaman derives. But of him, more later.

One significant effect of the development of agriculture was the phenomenal increase in human population. *Homo sapiens*, one of the rarest, became the most numerous of mammalian species. This resulted in a tremendous acceleration in the rate of cultural development. Enrichment of culture, Linton points out, depends primarily upon above average minds. These are mutants of unpredictable appearance whose abilities are rarely inherited, and who count no more than possibly one in 3,000 of the population.[2] It is more than likely that not a few of the mutants turned their superior intelligence to the practice of healing: hence the Shaman. Shaman designates both priest and medical man.

We know little of the Neolithic Shaman, but we meet his counterpart in primitive cultures. In paleolithic culture, before the discovery of agriculture, the most important individual in the community and the nearest approach to a chief was a shaman. His functions, however, were only sporadic and incidental. It is common among anthropologists to attribute to the Shaman " hysterical tendencies," yet I know of none who has undertaken to define precisely what he intends thereby. Despite this ambiguity, the characterization is astute and most likely correct.

The medicine man was rarely, if ever, a genuine psychotic. To be a successful practitioner required a firm grasp of reality and superior intelligence. At the same time, the average medicine man was not a charlatan. He believed in his own powers and frequently possessed abilities in what is now called extra-sensory perception. He was also, in most cases, an excellent psychotherapist and possessed a knowledge of genuine and non-magical remedies for common ailments. " There can be no doubt," Linton concludes, " that a study of African materia-medica and healing practices would contribute significantly to our own medical knowledge." [8] Reverting to the noted description of the Shaman as possessed of *hysteric tendencies*, it is of interest to recall that as late as the middle of the 19th Century, somnambulists were thought by some to possess extraordinary diagnostic acumen.

I have devoted a seemingly disproportionate amount of my available

[7] R. Linton: *The Tree of Culture*. New York: Knopf, 1955, p. 86.
[8] *Ibid.*, p. 430.

time to the treatment of what may be labeled primitive medicine. Yet this was in effect the epoch of longest duration in the history of medicine, and it witnesses the crystallization of certain features in medical recruitment and medical education which remained dominant down the ages, almost indeed until the rise of the universities in the 13th Century. It will serve our interest to define these features. Nominally, the pursuit of medicine was open to all. Only the exceptional, it would appear, attained empowering recognition, but the aspiration was free to every man. Initially, experience was the sole teacher. But with the accumulation of material wealth and the growth of cities, with the division of labor, the development of specialization, and particularly after the invention of writing, rites, mysteries, and esoteric lore were formulated into a *gnosis* and *techné* of medicine that could be passed on from master to novitiate. The teaching of medicine was done by those willing masters to whom the acceptable pupils applied. The teaching of medicine was seemingly as unrestrained as was the pursuit of the aspiration to learn. And that which fostered the growth of human culture, namely wealth, leisure, and the growth of population, with the concomitant growth of commerce, markets, trade routes, and populous cities, fostered also the growth of medicine.

It was no folly of the Babylonians that they exposed their sick at the market place, soliciting those who knew aught of the ailment to counsel with them. For the market place, the fair, and the cities that harbored them, attracted the venturesome, and the informed, as well as the pretenders. To this very day, be it noted, the doctor is more likely to locate on Main Street than on some alley way.

One can juxtapose the history and geography of the development of significant medical centers with the history and geography of the major maritime and overland trade routes and centers.

Noteworthy then are these distinguishing characteristics of the epoch in medical education which has its undefined beginnings in prehistoric times and its end with the rise and growth of the universities: that access to the study and practice of medicine was relatively free, as was also the teaching of medicine. Whosoever chose could learn and teach. There were no schools in the physical sense, though there were " sacred " places, and temples. The so-called Schools were those of thought, theory, and practice. They were like the invisible colleges of the seventeenth century, and indeed like the nascent universities of the thirteen hundreds. Also they were mobile, wherever the adherents gathered—there was the school.

It will be appreciated, I trust, that I am delineating this epoch in the teaching of medicine in broad strokes. It would be easy, but not very

relevant, to cite those instances which do not strictly correspond to my generalizations—say the Babylonian and the Egyptian. But these were unique civilizations that had run their course before our own historic development took form. And, I may add, though I cannot fully expound it here, their singular histories, notably that of Egypt, mirror the same patterns of progression which characterize our own experiences. In time the practice of medicine became professionalized, access to it restricted, teaching the prerogative of an elect, and instruction rigidly formalized. Commenting on the latter stages of Egyptian medicine, Sigerist notes the dominance of the priests and affirms, "Wherever there is a numerous clergy that has a firm grip on the people, magico-religious medicine flourishes at the expense of rational medicine." [4] It appears as if this were the inevitable case, save only that with each succeeding age the priests serve different gods, magic and miracles are of a different order, and what is deemed rational is unique and novel.

The epoch I have sketched, terminates, I postulated, with the rise of the universities in the thirteenth century. "What," one might ask, "of the early Christian era? Does not that mark an epoch in the teaching of medicine?" In a certain sense it does—but not in the sense in which I am treating the subject. The Christian movement was less the enemy of science than the lover of God.

Christianity emerged in, and out of, a world in chaos. The science, the practice, and the teaching of medicine declined less because of Christian doctrine and Christian practice, than because the foundations of civil, economic, and cultural existence had crumbled, antecedently. Christianity took over a morally, culturally, and economically bankrupt world. It set out to redeem it morally. All else could, indeed had to wait. It is as Henri Pirenne has phrased it "needless to insist upon the increasing decadence of intellectual life and of the ancient culture after the third century. This decadence was visible everywhere, in science, art, and letters. It was as though the very mind of man were suffering from degeneration. Pessimism and discouragement were universal. Julian's attempt at restoration was a failure, and after him the genius of antiquity no longer sought to escape from the grip of Christianity." [5] Indeed there was no other "escape," for, again to quote Pirenne, "The man in search of a career, or a refuge from the turmoil of the Age, took shelter in the Church, whether

[4] Henry E. Sigerist: *A History of Medicine*. New York: Oxford Univ. Press, vol. 1, 1951, p. 268.

[5] Henri Pirenne: *Mohammed and Charlemagne*. London: G. Allen & Unwin, Ltd., 1939, p. 118.

he was a great lord like Sidonius or Avitus, or a ruined man like Paulinus of Pella." [6]

The aforegoing is not to be understood as a blanket defense of church history which is not without its dismal parts. But I cannot pursue this subject further. It is too vast and complicated to be treated in brief.

I signal the thirteenth century as the end of the first, and the beginning of the succeeding, epoch in the history of medical education because in this century, and in association with the rise of the universities, we perceive the beginnings of the restrictive regulations which were henceforth imposed upon the student, the practitioner, and the teacher of medicine.

These restrictive regulations were formulated by the temporal kings and enforced by their temporal powers. Roger, King of Sicily, in 1140, and Frederick II, in 1224, promulgated stringent laws regulating the study, the teaching, and the practice of medicine. "Frederick's edict," writes Garrison, "did much to elevate the status of the respectable physician and correspondingly to diminish the number of quacks." [7] Frederick II thus emerges as the defender of the respectable physician; and undoubtedly his role is well titled. But as is so often the case in history, he who comes as the defender oft remains as the captor. Henceforth the study of medicine and the teaching of medicine, are sheared of a goodly portion of their historic freedom. The "defender of the respectable" ordained that "none of the Salernitan teachers could teach medicine or surgery anywhere but at Salerno, nor any but those duly certified by the King's officers could claim the title of medical teacher. The punishment of death was imposed on the officials who violated their duties in giving effect to these laws." [8]

Similar restrictions were imposed on the students. Envious of Bologna, Frederick II established by decree the Studium, i. e., the University of Naples, as ill fated as it was miserably conceived, and once again with the same restrictions on Masters and Students as those imposed on Salerno. D'Irsay comments on this eventuation as follows: "This grievous precedent, eagerly imitated at the end of the Middle Ages, marks the University of Naples as the first in a long line of State Institutions, destined to appear everywhere two hundred years later." [9]

[6] *Ibid.*, p. 124.

[7] F. H. Garrison: *In Introduction to the History of Medicine.* 3rd ed., Philadelphia, London: W. B. Saunders, 1921, p. 165.

[8] Theodor Puschmann: *Geschichte des medicinischen Unterrichts.* Leipzig: Veit, 1889, p. 176.

[9] Stephen D'Irsay: *Histoire des universités françaises et étrangères des origines à nos jours.* Paris: A. Picard, vol. 1, 1933, pp. 134-135: "Ce fâcheux précédent, imité avec empressement à la fin du Moyen Age, désignait nettement l'Université de Naples

Haskins neatly sums up the emergent relations of kings, courts, and universities, in his characterization of Frederick II: "It is characteristic of Frederick's strongly personal policy that the intellectual life of his kingdom centres in his court rather than in universities, and that the southern universities in his reign show little vigor of life and leadership. His absolute and paternal ideas of government left no place for independent corporations of masters and students living the free and turbulent life of the northern *studia*. So Salerno, which had grown to eminence as a school of medicine without the aid of prince or pope, found itself tied down by royal statue in 1231 as part of a comprehensive regulation of the practice of medicine, surgery, and pharmacy throughout the kingdom of Sicily, issued in the interests of bureaucratic administration rather than of university development. The course of study is laid down by law, and royal officers are to be present at the examinations. A similar bureaucratic purpose runs through the statutes establishing the University of Naples in 1224 and reforming it in 1234 and 1239. Frederick needed trained public servants, and he preferred to have them brought up in his own kingdom rather than in Bologna and other Guelfic cities of the North." [10]

Frederick II was a preeminent person, the forerunner of numerous and lesser kings and princelings who saw in the University an instrument and source of power and prestige. Scores of Universities were founded during the 13th and 14th centuries, not all of them, however, by the temporal rulers, for the Church was not unmindful of the potentialities of the universities—for its own ends. This is perhaps most poignantly reflected in the creation of the University of Toulouse in 1229. It was founded by the Count of Toulouse on demand of Popes Honorius III and Gregory IX, in order to extirpate the Albigensian heresy. Carcassonne and Béziers, the strongholds of the Albigensians, were taken and sacked in 1209. The Albigensians were mercilessly slaughtered, but to annihilate all lingering "error," there was need, as the perfidious Jean de Garlande affirmed, "*et doctor, et ignis, et ensis*," not only fire and sword, but also the professor, and, as d'Irsay wrote, "*c'est précisément dans ce but que Toulouse fut fondée.*" [11] This instance is, of course, not representative of the motives of the Church in the founding of its universities. The Church

comme établissement d'État, le premier d'une longue lignée, qui devait se multiplier surtout deux cents ans plus tard."

[10] Charles Homer Haskins: *Studies in the History of Mediaeval Science*. Cambridge: Harvard Univ. Press, 1924, p. 250.

[11] D'Irsay, *op. cit.*, p. 137.

had need of clerks, ecclesiastical functionaries, and doctors in theology, no less than the formative states had need for notaries, lawyers, and civil administrators, i. e., literate personnel for its nascent and growing bureaucracy. In the race for ecclesiastical prestige and personnel on one side and for power and civil servants on the other, medicine was perforce but little fostered in the universities. Of the two preeminent universities, Bologna was the fountainhead of jurisprudence, and Paris that of theology. Padua and Montpellier were the main centers of medical education. Other universities included schools of medicine in their academic ambient, but they were in the main feeble and futile: They had few students and fewer professors.

The teaching of medicine declined grievously. Only the study of anatomy and of surgery prospered. Medicine was taught from the texts of Hippocrates, Galen, and the later-day compilators. The Universities provided no practical training, only theoretical indoctrination. It is no exaggeration then to say that during this second epoch of our review the teaching of medicine had sunk to a base level, thus meriting all of the opprobrious criticisms directed at it by Petrarch and Paracelsus.

This second epoch calls for some delimitation in time. To my mind it extends from the 13th to the 17th century. In the latter period we can perceive the emergence of a new era, the beginnings of a new epoch, one that derives from the development of humanism and of inductive science. Both of these developments, we need to note, took place largely outside of the universities, and were in a measure opposed by them. Once again free men joined freely to pursue in common their interests in learning and science. They formed their Invisible Societies (1645), their Academies (1657), their Royal Societies (1662), and bound the world of the learned in a reticulum of correspondence and reports.

The teaching of medicine revived, and in time it prospered, but the center of its influence was no longer the university lecture hall, but rather the hospital ward. Initiated by Montanus at Padua in 1543, the bedside teaching of medicine was brought to a high degree of skill by Boerhaave of Leiden, whom the great Haller called "the common teacher of all Europe." This epoch is well named—the era of great teachers. Its preeminent men were not infrequently successful practitioners, much favored teachers, and the writers of copious texts embodying their clinical observations and theoretical conjectures.

Garrison, who applauds the 17th century, in contrast characterizes the 18th century "as dull and sober sided as that of the Arabic period." It was the century of the great theorists, of Stahl, Bordeu, Boerhaave,

Brown, Reil, and the other system makers. Garrison finds little merit in them, yet, I submit, this much credit must be granted them, that cut free from the bonds of Hippocrates, Galen, and the Arabists, they sought to reconstruct medicine in the patterns of their immediate experience and the contemplation thereof. There was during this epoch a greater measure of freedom in the pursuits of medicine—in its study, practice, and teaching, than during the preceding epoch, and more than prevails in the epoch that followed. Here I am impelled to indulge in a brief aside. It is common among medical historians to lament the decline in the practice of medicine during the period which extends from the sixteenth to the very middle of the nineteenth century. They despair of the blood-letting and purging, of the unbridled use of emetics, and of the therapeutic and pharmacological jungle in which the physician wandered as one both deluded and blind. That the practice of medicine was indeed in a degraded state, cannot be denied. But it is, I submit, the historian's obligation to understand rather than to blame. And this period is not difficult to comprehend. It is a transition period, one in which the old was discarded and the new not yet brought into being. Men do not attain to knowledge or wisdom in a single leap. They grope for it, and groping they often wander far from the mark. Were all the theorists and system makers fatuous and futile? Were they not rather earnest men grappling with the unknown? And how many among those we celebrate as the true scientists derived their inspiration, be it only in a negative pattern, from those others who before them had made the wrong guess, or hypothecated an erroneous theory? I am inclined rather to regard this period as heroic in spirit, even if modest in accomplishments.

Be that as it may, this third epoch in our brief review yielded to our own. Its beginnings are difficult to date without a good deal of arbitrariness (let us say in the 1840's), but its outstanding characteristics are easily discernible. Ours is the epoch of the laboratory and the specialist. "The teaching of medicine as a science," wrote Garrison, "as something of larger scope than its practice, began with the foundation of laboratories and with the gradual assemblage of specialties as units in university instruction." [12] But of these developments Theodor Billroth, writing in 1876, had a rather dismal view: "the object of our modern endeavor is to make the physician's skill independent of tradition, and by means of written records to conserve the art of healing for all time, so that it may be independent of the talent of the individual and may be reduced to an

[12] Garrison, *op. cit.*, p. 776.

absolute science. All knowledge and skill are to be determined and controlled by means of the laws of arithmetic and logic in order to make everything absolute and permanent." Further he adds: "I doubt if this good will ever be reached, at least in the art of healing." [18]

Some believe that the goal *has* been reached! Certain it is that the dominance of the laboratories and of the specialties has profoundly affected the teaching of medicine. Paradoxical though it may seem, they, the laboratory and the specialist, have displaced the clinician as teacher. In many a medical school the Professor of Medicine is not one schooled and experienced in the treatment of the sick, but rather is noted for his research work in some particular field in the physical or biological sciences. Also, access to the study of medicine has become increasingly restricted. Both the pre-medical and the medical curricula are exacting and quite rigid. The teaching of medicine has become professionalized. To a large extent teaching medicine has become *the* career of "the full time man." What effects all of this has had on Medicine, in its embracive and ultimate gauge, i. e. on the life and well being of the people, currently concerns and troubles a good many thoughtful persons. Clearly, however, neither time nor the commitments of my presentation allow for an excursion into this subject.

In bringing this presentation to a close I want to revert to the argument which I advanced at the beginning. Medical education, I submit, has its own, singular history. It is distinctive from the history of the development of the science of medicine. Those who teach medicine deeply influence the practice of medicine and bias the direction of the development of the science of medicine. The history of the teaching of medicine is a field of study which merits and requires more intensive development.

[18] T. Billroth: *The Medical Sciences in the German Universities.* New York: Macmillan, 1924, p. 2.

SOME OBJECTIVE FACTORS OF BABYLONIAN MEDICINE IN THE LIGHT OF NEW EVIDENCE *

MARTIN LEVEY **

In the past, the magical and exorcistic nature of medicine in Babylonia has been unduly accented. The last decade, however, particularly since the publication of Sigerist's book on the subject,[1] has seen the discovery of important texts which are antidotal in character. With a much greater objectivity (described by Sigerist as empirico-rational) evidenced in these new tablets, the framework of ancient Mesopotamian medicine is beginning to assume a more definite form.

A new perspective now makes it possible to see the crude outline of this ancient medicine as revealing a fairly logical structure in its actual practice. Evidence for this tendency toward an objective system of medicine is to be found in the relationships among the various texts themselves. First, two companion series of relatively objective medical texts seem to stand out. One is the diagnostic-prognostic or symptom group, and the other is the therapeutic text series. Second, this primarily objective pair of texts complements the third series of magical medical tablets. Thus, the Babylonians tried to work out an all-inclusive and integrated practice of medicine.

1. The Diagnostic-Prognostic (SA. GIG [2]) Texts and their Catalogue

In 1951, Labat made the first important step toward establishing the unity of the various medical texts.[3] This was brought about by his publication of the transliteration, translation, and texts of a large number of related tablets. This series is called SA. GIG or *sakikkū*, perhaps best translated as " symptoms." It is better known by its Akkadian incipit as *Enūma ana bīt marṣi āšipu illaku*, " When an *āšipu* goes to the house of a sick person." Without too much certainty, the *āšipu* is generally

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[1] H. Sigerist, *A History of Medicine*. New York: Oxford Univ. Pr., 1951, vol. I.

[2] Words in capitals are Sumerian; foreign words (other than bibliographical) in italics are Akkadian.

[3] R. Labat, *Traité akkadien de diagnostics et pronostics médicaux*. Paris, Leiden, 1951, 2 vols. (Collection de travaux de l'Académie Internationale d'Histoire des Sciences.)

considered to have been an exorcist who possessed a rudimentary but definite medical knowledge. In these texts, he is primarily concerned with the diagnosis and prognosis of disorders which have been arranged largely according to their apparent seat in the body.

Altogether there are forty tablets in this extended treatise. For each of the five parts surmised by Labat, he gave the incipits beside the number of tablets. These incipits are of interest:

Part I (tablets 1, 2) When the *āšipu* goes to the house of a sick person

Part II (tablets 3-14) When you go near a sick person

Part III (tablets 15-24) If, after a day's illness

Part IV (tablets 25-34?) When

Part V (tablets 35-40) If the future mother, when she is pregnant, her forehead is yellow [4]

An example of the content detail is given from a small part of the 35th tablet:

line 83. If the future mother brings up pus by the mouth, she will die with the infant she carries.

84. If the future mother, her hands and feet are paralysed: 21 prognoses (?).

85. If the future mother, the head of her navel is loose, she will carry to term the child she bears.[5]

The prognosis is given as simply as possible; the most common ones are that the patient will live or die. The series is meant to cover the entire gamut of over 3000 syndromes as the Babylonians knew them. For prognosis, the *āšipu* checked, among other things, dyspnoea, hand movements, transpiration, inequality of temperature in different parts of the body, facility of movement, color of eyes, fingers, head pains, ears, ulceration, and fevers in general.

At Nimrud, Mesopotamia, in 1955, an impressive medical find was made in a section which had been destroyed by fire after 612 B.C.[6] This discovered text corroborated almost all of the arrangement of the SA. GIG series which Labat had made. The tablet is a Table of Incipits, or a

[4] Some of the difficulties in assembling this mass of material are noted in E. Weidner, Die Serie *Enūma bīt marṣi āšipu illiku*. *Archiv für Orientforschung*, 1945-51, *15*: 84. In his excellent work, Labat pieced together the evidence from about 150 tablets and fragments to give a nearly complete series.

[5] Labat, *op. cit.*, p. 208.

[6] Wilson, J. V. K., Two medical texts from Nimrud. *Iraq*, 1956, *19*: 40-49.

Catalogue, of the SA. GIG series.[7] It is partly destroyed; the remainder is difficult to read. What is left begins with the end of the contents of tablet XIV of the series and goes on to the end to include the contents of the final tablet XL. As a rough table of contents, this text records the incipits of the separate tablets of the series noting their parts, the number of entries per part, titles of the parts, then a summary of the whole giving the total entries and total number of tablets.

The translation of one part reads:

[Tablet No.]	[No. of entries]	[Incipit]
[XV]	. . . entries	If, after a day's illness, the nature of the affliction
[XVI]	. . . entries	If, after a day's illness, he begins to suffer from headaches
[XVII]	. . . entries	If, at the onset of his illness, he had sweat pimples
[XVIII]	. . . entries	If the patient's skin
[XIX]	. . . entries	If he is hot and cold
[XX]	. . . entries	If the affected area is clammy with sweat
[XXI]	110 entries	If, though all his symptoms are proper
[XXII]	88 entries	If, . . . every morning
[XXIII]	103 entries	If he has vomited up bile
[XXIV]	137 entries	If he expresses a desire for an apple
[XXV]	85 entries	If, . . . stands at the head of the sick man's bed

Total of 860 entries: If, after a day's illness. Symptoms of . . . New edition.[8]

Another part, the last, reads:

[Tablet No.]	[No. of entries]	[Incipit]
[XXXVI]	147 entries	If a mother conceives again, her scalp and forehead becoming yellowish in color
[XXXVII]	118 entries	If a woman who is pregnant becomes ill
[XXXVIII]	141 entries	If a woman
[XXXIX]	152 entries	If a girl
[XL]	62 + 24 entries	If a baby

Total of 642 entries

Inclusive total of 40 tablets and 3000 [+ ?] entries of the series SA. GIG.

[7] Numbered ND 4358.
[8] Wilson, *op. cit.*, p. 134.

There were six sub-series altogether in the SA. GIG series according to the Catalogue. The last four sub-series (the first two are missing) are:

Sub-series 3. If, after a day's illness, the nature of the affliction
4. If a *miqtu* attack has fallen upon him
5. If he is ill with *ḫimiṭ ṣēti*
6. If a mother conceives again, her scalp and forehead becoming yellowish in color [9]

This should be compared with Labat who listed only five sub-series. Some of the incipits appear to be different; careful check shows that the numbering of the tablets is also a bit changed. This is partly explained by a final statement in the text. After the summary of the Catalogue, there is a colophon which explains that the series had not had a revised edition in the past. Also, it was Ešguziš,[10] son of Satran (?)-*šeš-ma-an-sum* who brought out the new edition. Ešguziš obtained the knowledge " from the cities of Sumer and Akkad, from the various lands of mountain and plain. . . ." It is possible that there had been an earlier edition than the one which Ešguziš knew. The SA. GIG type of text used by the *āšipu* practitioner owes its origin probably to the Babylonian practice that physicians did not treat patients known to be fatally ill. Their medical practice was limited only to those whose prognoses were favo[illegible]ble.[11]

2. Therapeutic Texts

Important in regard to the SA. GIG series is that it complements, in subject content, another and much fuller type of text series dealing with therapeutics. In the latter, there is much elaboration of the symptomatology and etiology of specific diseases. These texts are arranged, as are the SA. GIG tablets, according to the part of the body thought to be primarily affected such as the hands, feet, head, etc.

A good example of the therapeutic type of text is one found at Nimrud together with the SA. GIG catalogue text previously described.[12] Each section gives the syndrome, then the medicinal therapy. Occasionally an extraneous non-objective element is interpolated as part of the therapy, such as the making of an amulet to be worn about the neck. References to

[9] Labat, *op. cit.*, vol. I, pp. xiv, xviii-xix; Wilson, *op. cit.*, pp. 134-135.

[10] An originally Sumerian name. Ešguziš worked in the reign of Marduk-apla-iddina, king of Babylon (721-710 B. C.).

[11] Küchler, F. *Beiträge zur Kenntnis der assyr.-babyl. Medizin.* Leipzig: Hinrichs, 1904. K. 61, IV, 46.

[12] Numbered ND 4368.

the *gallū*-demon or the epilepsy-demon are primarily nominal; these names do not seem to have affected the prescriptions which follow the syndromes. This text, from just before the middle of the first millennium, B. C., reads in one section:

If, although he is ill, he has an insatiable appetite for food, and his hands and feet . . . , the diagnosis is *qāt ili munniši* . . . of Anu. To deliver him of *qāt ili munniši*, bray together lamb's wool, a pointer (from antlers) of a stag and *ankinūte*, and anoint nine times in the case of a man, and seven times in the case of a woman, until the patient recovers.[13]

Another interesting syndrome with its treatment from the same text is as follows:

If a man, while walking down the street, falls forward, his eyes remain wide open, . . . and he does not jerk (?) hands or feet, a *gallu*-demon has possessed him; in the manner of the epilepsy demon he will continue to influence him from time to time. Meat of a firstling . . . -ewe and plant alkali you shall dry, bray; mix with . . . and the breast milk taken during the period of uncleanness, of a woman who has given birth to a son. Recite an incantation over it and anoint him regularly (with the mixture), keeping also a piece of washed haematite placed about his neck until the demon has been drawn out of him.[14]

There are differences in the objectivity of the therapeutic type texts. Those quoted above have a minor element of the magical formulas. Others are completely objective. One of the oldest known texts in the medical literature, older than the most ancient Egyptian works, is a Sumerian tablet of ca. 2100 B. C. Although the reverse is in good condition, unfortunately the obverse is almost completely illegible. As a result, the syndrome and the name of the disease entity for which the various prescriptions are given, are not known.

The document has no trace of the magical or mystical medicine to be found in later first and second millennium texts. It may be compared profitably with the entirely empirical and rational Sumerian mathematics and chemistry known at the time.

Two of the prescriptions read:

Apportion . . . turtle shell (BAR. NÍG. BÚN. NA), horned alkali (TÊ. SI. SAR) (Salicornia fruticosa L.), salt (MUN), cassia (GAZI). Knead them together with powdered asafoetida (AŠ. ZI); wash them in high quality beer (and) boiling water. Sprinkle all the solution upon it (the ailing organ). Rub tree oil over it. Let pulverized fir cones (GIŠ Ú. KU) be added.

Purify and pulverize the water snake (MUŠ. A). Pour water over the AMA. MAŠ. DUB. KASKAL plant, the root of myrtle (GIŠ GIR), pulverized alkali

[13] Wilson, *op. cit.*, pp. 40, 42.

[14] *Ibid.*, pp. 40, 41.

(TÊ), barley (ŠE), and powdered fir resin (KU. ŠI. IB. ḪU). Boil. Let its extract be decanted. Wash it (the ailing organ) with the solution. Rub tree oil over it. Let ŠAKI be added.[15]

Most of the names of the plants are still highly uncertain in their identifications. Some of the other materials used, aside from those mentioned, are clay, honey, cow teat, potassium nitrate, balsam, a type of wine, etc. Over 25 plants are listed, some indigenous, others imported from great distances in the Far East. They used the seed, gum resin, root, twig, wood, bark, oil, and aqueous extracts. This text was forerunner of the non-manipulative and non-operational therapy found throughout the Mesopotamian medical literature.

3. Correspondence of SA. GIG (Symptom) with Therapeutic Texts

That there is a correlation of the symptom with the therapeutic texts may be shown by matching these two series. It is more than accidental that many passages of one series parallel those in the other series. Thus, corresponding to a therapeutic text in the previous section is the symptom text which follows:

If a man as he walks, falls forward, his eyes open without being able to return (to their normal state); if he is not able to move himself; neither his hands nor his feet, this man, the *gallû*-demon knows him . . . , it is an extreme crisis. . . .[16]

Another example of the close correlation of the symptom with the therapeutic literature concerns a neck wound. In the therapeutic text, ND 4368, previously mentioned:

If a man has been wounded on the neck, the . . . of his eyes give him frequent pain, *šarqu* and blood issue periodically from his nose, and his hands and feet are paralysed, a *gallû*-demon has possessed him. To deliver him, dry and bray sulphur and turtle shell. Mix with the soot of a furnace for magnetic iron. Touch all his muscles (with the mixture). Take also the beak of a black raven. Stitch it up with the gut of an *arrabu*, and keep placed around his neck until he recovers.[17]

Parallel with this is the purely symptom SA. GIG text where it is stated:

If he is wounded on the neck, the upper part of his eyes give him pain, and blood comes from the mouth, and his hands and feet are paralysed, then this man has the *gallû*-demon.[18]

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[15] M. Levey, *Chemistry and Chemical Technology in Ancient Mesopotamia.* Amsterdam, New York: Elsevier Pub. Co., 1959, p. 155.

[16] Labat, *op. cit.*, vol. I, pp. 190, 191, lines 16, 17, of tablet XXVI of series IV.

[17] Wilson, *op. cit.*, pp. 40, 41, obv., lines 15-25.

[18] Labat, *op. cit.*, vol. I, pp. 82, 83, tablet X of series II, obv., line 21.

In general, almost the same combination of symptoms is to be found in both the symptom and therapeutic texts. In the latter, very often, the symptoms are elaborated to provide more effective syndromal distinctions.

4. Magical Versus Objective Literature

That there was a definite attempt to distinguish the objective and magical elements in the second millennium, B. C., is borne out by two important evidential points. First, there is the well known and oft repeated text in which the king of Babylon sent both a physician and an exorcist to the Hittite monarch Muwattalli in Anatolia. This was about 1300 B. C.[19] A clear cut division of duties as well as a complementary relationship is thus apparent. To add to this bit of evidence, a tablet was discovered recently which fully corroborates this.[20] It is an Akkadian medical text written in the Hittite cuneiform style of about 1300 B. C. It seems to have been written by a student since the text contains Hittite and Luwian glosses where the writer failed to understand the context. On one side of the tablet is a series of completely objective prescriptions; the diagnosis in this case is missing. Where it would have appeared on the tablet, the text is illegible. On the reverse side of the tablet, probably for the same ailment, is a magical ritual of purification, a completely different approach to the sick person.

The objectivity of the one side may be shown by two of the prescriptions given:

> Cedar, *ṣalabitu* (Gloss: I do not know this *ṣalabitu* tree), juniper, frankincense seeds, myrtle, asafoetida, Euphorbia antiquorum (a cactus like plant of S. Africa), nightshade, a species of cedar, hellebore, apple, pine, Mecca balsam, calamus, box, pine seeds, myrrh, Artemisia judaica (a sagebrush like plant), seed of the chaste tree (Vites agnus castus), thyme, tamarisk, struthium, date palm, Comum maculatum. Pulverize all these aromatics in a wooden mortar. . . . He pounds it, mixes them with one another in emmer flour. Make a soup-like decoction in wine. On the same man, keep a moist poultice
>
> Likewise Euphorbia antiquorum, mint, saffron. You pound and cook it in the best beer. Make a soup-like decoction. On the same man, keep a moist poultice.

This unusual tablet with its two wholly antipodal approaches to medicine seems to indicate that although these two extremes were present in Babylonian therapy at the same time, there was not only a distinction but also a significant connection between them.

[19] H. H. Figulla and E. F. Weidner, *Keilschrifttexte aus Boghazköi*. Leipzig: J. C. Hinrichs, 1916, I, no. 10, rev. 34 ff.

[20] Kocher, F., Ein Akkadischer medizinischer Schülertext aus Bŏgasköy. *Archiv für Orientforschung*, 1952-3, *16*: 47-56.

5. Mixed Objective-Magical Texts

Toward the middle of the first millennium, B. C., much of the objective material became mixed with the magical in the same Texts. This may be seen in an Assyrian text on bruises. The following is a typical conglomeration of these two elements:

If a man be overcome either by . . . , or a staff, or by heat of the day, or by the quick driving of a chariot, to go to a woman is dead; to raise his heart in his recovery and his going to a woman, Practical prescription for this: calendula, *tarḫu* plant, Arnoglosson, Eruca, *ardašlum* plant, *kapullu* plant, cantharides. Pound these seven drugs and filter. Set a censer of pine before Ishtar. Make a beer libation. Recite the following charm seven times and give the prescription to him in wine. He will drink it for three days and recover on the fourth.

Charm: "Who art thou, as though it were a road, hast blocked my passage?," you will recite.

Charm: "Who art thou who, as though it were a road, hast blocked my passage? As though it were a tautened cord, thou hast loosed my girdle. As though it were in a merchant's sack, thou hast drawn tight all my muscles and bound them tight. Oh my witch . . . , my sorceress. . . . Thou hast loosed me like tautened cords. Thou hast drawn tight all my muscles as though it were in a merchant's sack. . . ."[21]

In another Assyrian text, the objective therapy is retained distinctly apart from the magical aspects. The following is a treatment for a head ailment:

If a man has an affection of the temples, pound and sieve poppy seed, melon seed, Arnoglosson seed, crocus seed, seed of the gall oak, seed of asafoetida, seed of *kiššani*. Mix in equal parts. Knead in vinegar. Sprinkle flour of roast corn and spelt flour on the place. Spread on a skin. Shave his head and bind it on and he will recover.

If ditto, roses, sumach, fir-turpentine, Galbanum, mucilage of sesame . . . wheat flour—in equal parts thou shalt mix. Bray and put in sweet Ú. SA beer. Boil. These drugs . . . thou shalt mash and bind on.

A number of other prescriptions follow for the same affection. There are also charms for this head ailment:

. . . . Oh evil spirit, get thee hence! Oh evil demon, get thee hence! Oh evil ghost, get thee hence! Oh evil devil, get thee hence! Oh evil god, get thee hence! Oh evil fiend, get thee hence! Oh hag-demon, get thee hence! Oh ghoul, get thee hence! Oh robber-sprite, get thee hence! By heaven, be ye exorcised! By earth, be ye exorcised! Recital of the charm.[22]

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[21] R. C. Thompson, Assyrian prescriptions for treating bruises or swellings. *American Journal of Semitic Languages*, 1930, *47*: 18. The plant identifications here are uncertain.

[22] R. C. Thompson, Assyrian prescriptions for the head. *American Journal of Semitic Languages*, 1937, *54*: 30.

Although the literature quoted in this section has been known for some time, a much better appraisal of its magic and objectivity is now possible. For thousands of years objective medicine in Babylonia tried to keep its head above water in a sea of magic. The newer tablets help to demonstrate that even in the first millennium, B. C., the objective tradition was still a strong one. Viewed in this light, it is much easier to follow objective medicine down to the end of Babylonian culture.

6. Further Objective Evidence from the List Literature

Aside from the descriptive literature, some of the new material for the history of Babylonian medicine has come from recently published texts of lexical lists.[23] These lists, first drawn up by the Sumerians, were the earliest ordering of scientific information. These are columns of names, drugs, spices, minerals, plants, and other objects as well as phrases relating to them with synonyms and/or equivalents in one or more corresponding columns in much the style of a dictionary. These lists were formulated sometimes according to similarity of their signs, the close association of materials in actual practice, or other bases. The various groupings made these lists readily accessible as a kind of thesaurus. Because of the terseness of the lexical lists, when used in the schools, they required oral elaboration to complement them. Needless to say, it is their highly abbreviated character which offers so much difficulty for their present study and understanding.

The new lists relating to medicine are concerned mainly with plants and date from about the middle of the first millennium, B. C. Of these, some with three columns give the drug plant, the name of the disease for which it was used, and then the manner of use of the drug. There are variations in these lists. They help to fill some of the many lacunae in our knowledge. The new fragments add about 1500 lines to the already large medical list literature.

An unusual list recently published gives the names of about 250 drugs found in a drug storeroom of the first millennium, B. C.[24] Some of the substances are well known. In addition to the names of the drugs, their places on the shelves are given. Notation is made if they are stored in vessels.

The lexical lists are among the most objective in Babylonian medicine.

[23] Fr. Köcher, *Keilschrifttexte zur assyrisch-babyl. Drogen- und Pflanzen Kunde.* (Deut. Akad. d. Wissenschaft. z. Berlin, no. 28). Berlin, 1955.

[24] Köcher, *op. cit.*, text 36, plates 77, 78, 79.

When these have been integrated into our knowledge, great strides will have been made in understanding Babylonian science.

7. Conclusion

1. A thread of objectivity persists throughout the history of Babylonian medicine. A preliminary observation would indicate that the second and third millennia produced a more rational medical literature than did the first millennium, B. C.

2. Two lines of Babylonian medicine operated side by side, often in harmony, the magical and the objective approaches. In practice, one was used to complement the other.

3. The objective approach to the practice of medicine in Babylonia is seen in the symptom series of texts taken together with the therapeutic text series. In the former are listed over 3000 syndromes and their resulting prognoses. The latter gives the diagnoses and the manner of preparation of the prescriptions and their use. The two series serve to complement one another.

NOTES AND COMMENTS

ISAAC JENNINGS AND THE MAGIC BULLET

HEBBEL E. HOFF*

In his Harben lectures for 1907, (1) Paul Ehrlich wrote that "Antitoxins and antibacterial substances are, so to speak, charmed bullets which strike only those objects for whose destruction they have been produced by the organism," epitomizing thus the dominant view of disease and the approach to therapy of the first half of this century.[1] Where or how Ehrlich came upon the concept has to my knowledge never been made clear, but I have thought readers of the *Bulletin* would be interested in the development of an almost identical concept in the writings of Isaac Jennings. It is of interest in view of doubts now being cast on full validity of the "magic bullet" concept, that Jennings wrote of it in the past tense, as a stage in his thinking that he had already abandoned.

Isaac Jennings was born in Fairfield, Connecticut in 1788, and in 1809 studied medicine with Dr. Ives in New Haven, later being granted an honorary M. D. by Yale after its medical department was opened. (2) Entering practice in nearby Trumbull and Derby, Jennings began early in his practice to become suspicious of the value of the drugs available to practitioners of his days and came more and more to rely upon placebos; finally he made public his views on the ineffectiveness of most medicines

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[1] It is of some interest to note that here Ehrlich restricts the concept of the magic bullet to "antitoxins and antibacterial substances . . . produced by the organism" and nowhere in this volume does he explicitly extend the idea to chemotherapy; the omission of the last three words as it is sometimes quoted gives quite a different impression. Indeed, he was most guarded in writing on chemotherapy; "For man the combinatory treatment is of the greatest importance for another reason. The complete sterilization of the body, i. e., the total destruction of every parasite, is often to be accomplished by the administration of doses which come very close to the lethal dose. Such a procedure directly endangering life may be permissible in the animal experiment, but never in man. One is, however, justified in hoping to cure the disease without endangering life by the simultaneous administration of three, four or five substances, chosen in such a manner that their actions are concentrated on the parasites, whilst in their vertebrate hosts they are distributed over several different organs." (1, pp. 93-94) It would be of interest to know if in any other writings Ehrlich explicitly speaks of the "magic bullet" in chemotherapy, or whether the attribution was not a natural-enough extrapolation of de Kruif; my own readings tend toward the latter explanation.

and began to employ rest and diet and other hygienic measures, believing that " the best method of obtaining a recruit of the vital forces . . . is to keep quiet, take a kindly care of the body, and leave the mustering, marshalling, and entire disposition of the forces to an unrestrained operation of natural law." (2)

The interest in health and hygiene at the newly established College at Oberlin where a " Female society of Oberlin for the promotion of health " had been founded as early as 1835, became a strong attraction to Jennings; in 1837 he made a visit to the College, and soon thereafter settled in Oberlin, becoming a member of the Board of Trustees of the College in 1839. (2)

There, in 1847, he wrote on *Medical Reform*: a Treatise on Man's Physical Being and Disorders, Embracing an Outline of a Theory of Human Life and a Theory of Disease—its Nature, Cause and Remedy, (3) in which he espoused a modified Brunonian view that " disease is simply a lower degree of action of parts affected, taken as a whole, than is performed by the same parts in their highest state of health, together with such defects in the solids and fluids as flow from such depressed action. In other words, an organ, whether simple or complex, does the best it can under existing circumstances." (3, p. 85)

In this work he wrote of his early years of practice, when he still relied upon medicine, and described the change in his views in a first approximation of the " magic bullet " concept:

> I still regarded disease in the light of an enemy, " wrong action," or something of that kind. When standing by the bedside of a patient racked with pain and ghastly with disease, I seemed to be standing by the side of a friend in close, indiscriminate conflict with a deadly enemy that was bent on his destruction, and I panted to raise my sabre and give the foe a home thrust, and relieve the friend. But my fears were that I might miss the enemy and kill the friend; or if, perchance, I should strike the enemy and not give him a mortal blow, it would only enrage him and arouse him to more deadly efforts. Under such circumstances I deemed " discretion the better part of valor." Whatever the difficulty was, whether it consisted in a want of the right apprehension of the nature and seat of the enemy, or in want of skill to use our weapons, or whether the weapons of our warfare were well adapted in themselves to the end for which they were used provided we knew how to bring them to bear directly on the enemy without harm to the friend, I could not tell; but sure I was, that, according to any rules of medical tactics with which I was acquainted, the weapons had better be kept from the field. (3, p. 225)

Five years later, in a work on *The Philosophy of Human Life*; with Special Design to Develop the True Idea of Disease; its Nature, Immediate Occasion, and General Remedy, (4) Jennings adopted the name " ortho-

pathy" for his views, "from the Greek words; *Orthos*, upright, erect, true, and *pathos*, affection—right affection. The vital economy always maintains an upright position. The tendency of all her movements, in the lowest depths of disease, as well as in the most vigorous natural action, is as true to the pole star of perfect health, as the needle to the poles."

In this volume he wrote, in a footnote,

> On walking out one day, while studying medicine, to exercise my enfeebled muscular system, and ease my aching head, I saw a man firing into a flock of his neighbor's ducks that were reposing themselves on a little eminence, a few rods from the road; and while wondering why the man should do such a deed, he brought me a wild duck that had nestled among the tame ones; which he had killed without apparently injuring one of the others. Now "thinks I to myself," this is just the kind of skill which I need and must have. I must be able to pick up the medical rifle and pick out the wild ducks of disease from among the tame ones of living organs, without seriously wounding the latter. (4, p. 29).

Is there any connection at all between these expressions, obscurely published and probably not widely read, and Paul Ehrlich's a half-century later? Jennings states explicitly that the idea came to him as a medical student, presumably in 1809, almost a century before Ehrlich, although we may perhaps discount this because of the obvious development of the concept, from sword to rifle, between 1847 and 1852. Very possibly the analogy was deeply rooted in medical thinking, coming to the surface periodically as the value of therapeutics came into question; in Jennings' times as an era of therapeutic nihilism began, in Ehrlich's time as specific therapy began to have its great successes; perhaps some reader of the *Bulletin* will be able to provide us an earlier example.

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A NOTE ON MEDICAL CARE IN MEDIEVAL ENGLISH HOSPITALS *

VERN L. BULLOUGH

In examining the careers of medical men associated with the University of Oxford during the late medieval period, I found a number of them who served in some capacity at one or more of the medieval English hospitals. This raises a question about the type of medical care available in these institutions. The general assumption has been that medieval hospitals were in the category of ecclesiastical institutions rather than medical. The most comprehensive study of the subject states that hospitals were

> . . . for care rather than cure: for the relief of the body when possible but pre-eminently for the refreshment of the soul. By manifold religious observances, the staff sought to elevate and discipline character. They endeavoured, as the body decayed, to strengthen the soul and prepare it for future life. Faith and love were more predominant features in hospital life than were skill and science.[1]

While it is obvious that some sort of nursing care was available in these hospitals,[2] little attention has been given to actual professional medical care. Professor E. A. Hammond in his valuable study of physicians in the medieval religious houses did not deal with the hospitals as such and ended his study with the thirteenth century.[3] He felt that at that time "physicians disappear from the lists of monks and friars"[4] because of several factors. Among these he listed the rise of the universities with their more specialized training, the increasing complexity of medicine, and the influence of papal and conciliar pronouncements relating to the practice and study of medicine by men of the church.[5] I am in agreement with his conclusions and this note is intended as a brief supplement to his study.

While the number of medical graduates from Oxford who can be identi-

* Research was assisted by a grant from the Huntington Library, San Marino, California.

[1] Rotha M. Clay, *The Mediaeval Hospitals of England* (London: Methuen, 1909), p. viii. *See also* David Knowles and R. Neville Hadcock, *Medieval Religious Houses* (London, New York: Longmans, Green, 1953), and Jean Imbert, *Les hôpitaux en droit canonique* (Paris: Vrin, 1947).

[2] Clay, *op. cit.*, pp. 152-153, and Knowles and Hadcock, *op. cit.*, pp. 45-46.

[3] E. A. Hammond, "Physicians in medieval English religious houses," *Bull. Hist. Med.*, 1958, *32*: 105-120.

[4] *Ibid.*, p. 118.

[5] *Ibid.*, pp. 119-120.

fied before 1500 is very small, several of them served in some hospital capacity or another. If more complete records were available on the rest, it might be found that an even greater percentage served in such capacity.[6] A listing of those who served in the various English hospitals would include the following:

John Arundel, physician to Henry VI in the mid-fifteenth century, served as warden of Bethlem (Bedlam) Hospital after receiving his doctorate in medicine from Oxford.[7]

Simon Bredon, who received his doctorate in medicine by 1355, served as warden of the Hospital of New Work, Maidstone, Kent, from 1358 until his death in 1372. He was also physician to Joanna, queen of Scots.[8]

John Byllesdon, who supplicated for his doctorate in medicine in November 1455, served as canon of Newarke Hospital from August 1464 until his death in 1484.[9]

Nicholas Colnet, king's clerk, sergeant, and physician from 1413 until his death in 1420, was also warden of St. Bartholomew's Hospital, Playden, Sussex during that same period. Whether Colnet received his medical degree from Oxford cannot be known for certain, but he did receive his B. A. from that Institution.[10]

Henry de la Dale received a bachelor of medicine degree from Oxford and afterwards served as warden of St. Mary Magdalen Hospital in Preston, Lancashire.[11]

William Goldwyn, a well known London physician and bachelor of medicine from Oxford, probably had some connection with the Hospital of St. Thomas Acon, London, since he requested burial near the altar in the church of the hospital and bequeathed some twenty pounds to the hospital.[12]

William Hobby, an Oxford bachelor of medicine, served as joint warden of Bethlem (Bedlam) Hospital, London, in 1479. In addition he was physician to Edward IV.[13]

John Malverne, who held a doctorate in both theology and medicine, was master of St. Katherine's Hospital from at least 1398 and probably earlier. He still held this position in 1409. Malverne also was physician to Henry IV.[14]

John Middleton, physician to Richard II and later to Henry IV, was master of St. Nicholas's Hospital in York. He had received his M. A. from Oxford by 1383, but whether his medical degree was from Oxford cannot be determined.[15]

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[6] My prime source for the medical graduates is the recently published and invaluable register of Oxford graduates: A. B. Emden, *A Biographical Register of the University of Oxford to A. D. 1500*, 3 vols., (Oxford: Oxford Univ. Press, 1957-59). There were probably somewhere between 125 and 150 men at the university who can be actually identified as associated with medicine during this period. Most of these are from the last part of the fourteenth century or later. This is perhaps due to the fact that records for the earlier period are not so plentiful.

[7] *Ibid.*, vol. I, p. 50. Where variant spellings exist I have followed the first choice of Emden.

[8] *Ibid.*, p. 257.

[9] *Ibid.*, p. 333.

[10] *Ibid.*, p. 469.

[11] *Ibid.*, p. 558.

[12] *Ibid.*, vol. II, p. 787.

[13] *Ibid.*, p. 938.

[14] *Ibid.*, p. 1211.

[15] *Ibid.*, pp. 1276-1277.

Robert Sherborn, B. A. and probably B. M. from Oxford, served as Warden of the Hospital of the Holy Trinity and St. David by Kingsthorpe, Northamptonshire, in 1492. At the same time he was master of St. Cross Hospital, Winchester.[16]

William de Stafford, believed to have been affiliated with the University of Oxford, received payments in 1340 for attending patients at St. John's Hospital in Oxford.[17]

Henry Sutton, Merton College, who received a D. M. by 1467, served as master of St. Nicholas's Hospital in Salisbury from 1478 to 1495 and from 1498 until his death in 1501.[18]

It might be possible to include at least two witnesses to deeds at the Hospital of St. John the Baptist in Oxford among the group also. Both were probably affiliated with Oxford and with the Hospital. The first is a Master Ralph, *medicus*, who witnessed a lease transfer in 1290,[19] and the second is a Master Richard, *phisicus*, who witnessed a deed *c.* 1200.[20]

Most of these men are late fourteenth or fifteenth century graduates. Records of earlier graduates are hard to come by. Nonetheless even the ordinary university graduate who served as master or warden in a hospital undoubtedly had some training in medicine. John Mirfeld, who was associated with St. Bartholomew's Hospital towards the end of the fourteenth century, is a good example of this.[21] Mirfeld probably gained his medical knowledge from his experience at St. Bartholomew's. He states in the preface to his *Breviarium* that he was not a skilled physician and had never been a pupil in medicine.[22] Perhaps he was an amateur physician moved by compassion from his experience in the hospital, since of his two works, the *Breviarium Bartholomei* is purely medical, while the *Florarium Bartholomei* is a theological treatise which includes one medical chapter.[23] But Mirfeld is just one example. Another is Walter Staunton, M. A. Oxon, who was resident at St. John's Hospital, Basinstoke, Hampshire, from 1386 until his death. He bequeathed a collection of medical and surgical tracts to Merton College. Staunton, however, was not a

[16] *Ibid.*, vol. III, pp. 1685-1686.
[17] *Ibid.*, p. 1752.
[18] *Ibid.*, pp. 1819-1820.
[19] *Ibid.*, p. 1544.
[20] *Ibid.*, p. 1573.
[21] Sir Percival Horton-Smith Hartley and Harold Richard Aldridge, *Johannes de Mirfeld: His Life and Works* (Cambridge: Cambridge Univ. Press, 1936), p. 8. They edit and also translate the medical works. Whether Mirfeld was a student at Oxford is debatable. He probably was not.
[22] *Breviarium Bartholomei, Proemium*, in Hartley and Aldridge, *op. cit.*, pp. 46-47.
[23] *Ibid.*, p. 25.

master but a patient in the hospital, confined there because of an incurable infirmity.[24] There were undoubtedly others.

From a brief survey, it appears that university trained physicians were perhaps more common in late medieval English hospitals than has generally been realized, and that many of those who were not so trained might have been fairly well qualified lay practitioners. Perhaps the medieval hospital patient received somewhat more professional care than previously has been assumed.

LEPROSY IN MEDIEVAL ROMANCE:

A Note on Robert Henryson's "Testament of Cresseid"

SANFORD V. LARKEY

The tragic and ill-starred tale of Troilus and Cressida was one of those strange love romances of the Middle Ages that intrigued poets. No one seemed to know what to make of the heroine, Cressida. Was she a heartless wanton or an innocent, betrayed woman? Based on earlier legends of the Trojan War, the story has been told in many different ways, by Boccaccio, Chaucer, and others, and later by Shakespeare. Robert Henryson (15th century) in his "Testament of Cresseid" attempted a conclusion to Chaucer's version of the story. His poem is generally in the same metrical pattern as Chaucer's "Troilus and Criseyde" but with somewhat more of the feeling of Scottish ballad.

Henryson tells of how Cresseid became a leper, and his vivid description of the symptoms and facies of the disease and of the social condition of lepers may be of interest to medical historians. Also of note is his description of the god Mercury as a physician.

A few passages of Henryson's poem which illustrate some aspects of medicine and of the disease leprosy are given here in modernized version.[1] In modernizing, unfortunately, some of the rhymes and rhythm have been

[24] Emden, *op. cit.*, vol. III, p. 1770.

[1] These passages are taken from the original text as given in Walter W. Skeat's supplement to the *Complete Works of Geoffrey Chaucer*, vol. 7, "Chaucerian and Other Pieces," Oxford, 1897, pp. 327-346. A few short passages from the above were cited, in a different context, by Ida B. Jones, "Popular medical knowledge in XIVth century England," *Bull. Inst. Hist. Med.*, 1937, *5*: 405-451; 538-588.

impaired, but I have tried to be literal and at the same time to retain as much as possible of the original meaning and feeling.

As Henryson tells it, the story continues when Cresseid, having deserted her Trojan lover, Troilus, is in turn deserted by her Greek lover, Diomed, and so has become the scorn of both the Trojan and Greek camps. Her father, Calchas, a renegade Trojan, is a priest of the temple of Venus and Cupid, in the Greek encampment. Cresseid feels that all her troubles are due to these two gods and within their own temple she denounces them and cries out her reproaches, saying that she regrets ever having made vows or sacrifices to them and calling Venus "the blind goddess," and Cupid "false."

In a sort of ecstasy, she falls asleep and has a terrible dream: Cupid, incensed at her blasphemy, calls on the gods of the universe, the seven planets, to come and give judgment. Saturn, Jupiter, Mars, Phebus (the Sun), Venus, Mercury, and Cynthia (the Moon) descend from their spheres and gather. Henryson gives very life-like descriptions of each of the gods, as though in human form. He depicts Mercury as a poet and as a physician:[2]

> Boxes he bore with fine electuaries,
> And sugared syrups for digestion;
> Spices belonging to the apothecaries,
> With many wholesome sweet confection;
> Doctor in physic, clad in scarlet gown,
> And furred well, as such one ought to be,
> Honest and good, and not one word could lie.

When the gods are assembled, Mercury presiding, Cupid states his case, saying:

> . . . who will blaspheme the name
> Of his own god, either in word or deed,
> To all gods he does both blame and shame.
> . . . . . .
> This great injury done to our high estate
> Methink with pain we should make recompense:
> Was never to gods done such violence.
> As well for you as for myself I say;
> Therefore go help to revenge, I you pray.

Mercury appoints Saturn and the Moon to give the verdict:

> Then thus proceeded Saturn and the Moon,

[2] The ascription here of the god Mercury as a physician, and hence, as the divinity of medicine, may give some validity to the use of the two-serpented staff of Mercury as a symbol of medicine, instead of, or as well as, the single-serpented staff of Aesculapius.

When they the matter ripely had digest;
For the despite to Cupid she had done,
And to Venus open and manifest,
In all her life with pain to be opprest,
And torment sore, with sickness incurable,
And to all lovers be abominable.

This doleful sentence Saturn took in hand,
And passed down where mournful Cresseid lay;
And on her head he laid a frosty wand,
Then in low tone in this wise he did say;
"Thy great fairness and all thy beauty gay,
Thy wanton blood, and eke thy golden hair,
Here I exclude from thee for evermair.

I change thy mirth into melancholy,
Which is the mother of all pensiveness;
Thy moisture and thy heat to cold and dry;
Thine insolence, thy play and wantoness
To great disease: thy pomp and thy riches
Into mortal need; and great penuritie
Thou suffer shall, and as a beggar die."

Cynthia (the Moon) further defines the sentence:

"From health of body I thee now deprive,
And to thy sickness there shall be no cure,
But in dolour thy days to endure.

Thy crystal eyes mingled with blood I make,
Thy voice so clear, unpleasant, weak and hoarse;
Thy lusty complexion o'erspread with spots black,
And vivid lumps appearing in thy face.
Where thou comest, each man shall flee the place;
Thus shalt thou go begging from house to house,
With cup and clapper, like one lazarous.

When Cresseid awakes from the dream she picks up a polished glass and sees that her face *is* deformed, as Cynthia had said. Cresseid calls her father to her and tells him what has happened.

He looked on her ugly leper face,
The which before was white as lily-flower;
Wringing his hands, oftimes he said, Alas!
That he had lived to see that woeful hour!
For he knew well that there was no succour
To her sickness; and that doubled his pain;
Thus was there care enough between the twain.

When they together mourned had full long,
Quoth Cresseid, "Father, I would not be kenned;
Therefore in secret wise ye let me go
To yon hospital at the town's end;
And thither some meat, for charity, me send
To live upon; for all mirth in this earth
Is from me gone; such is my wicked worth.

Then in a mantle and a beaver hat,
With cup and clapper, wondrous privily,
He opened a secret gate, and out thereat
Conveyed her, that no man should espy,
Unto a village half a mile thereby;
Delivered her in at the spital-house,
And daily sent her part of his alms.

One day when she and other lepers are begging alms, some Trojan warriors pass by, among them Troilus. Cresseid, of course, cannot see who this is, and he does not recognize the poor, deformed wretch as the once lovely Cresseid. But something stirs his memory:

Then upon him she cast up both her eyes,
And with a glance it came into his thought
That he sometime her face before had seen;
But she was in such plight he knew her nought.
Yet then her look into his mind it brought
The sweet visage and amorous glancing
Of fair Cresseid, sometime his own darling.

Disturbed by this fantasy, he gives a purse of gold to the poor leper who had somehow brought back the memory of Cresseid. "Then rode away, and not one word he spake." The other lepers are amazed at the generosity of the knight's alms. Cresseid asks who had given her the gold. One of the lepers tells her that it was Sir Troilus, "gentle and free." Cresseid falls to the ground in a swoon, crying: "O false Cresseid, and true knight Troilus!"

This is the refrain of some following verses as Cresseid, with a deep sense of guilt, repents her unfaithfulness. When she is about to die, she asks that the ring Troilus had given her as a dowry be sent to him.

Henryson ends his little poem with this admonition:

Now, worthy women, in this ballad short,
Made for your worship and instruction,
Of charity I admonish and exhort,
Mix not your love with false deception.
Bear in your mind this short conclusion
Of fair Cresseid, as I have said before;
Since she is dead, I speak of her no more.

MEDICO-HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

JOHN FARQUHAR FULTON

1899-1960

Professor John F. Fulton died of a cerebral accident on Sunday, 29 May, 1960, full of honors but not of years.

Born in St. Paul, Minnesota, 1 November, 1899, he owed his higher education to Harvard and Oxford. From Harvard he graduated B. S. in 1921 and M. D. in 1927, *magna cum laude* in both instances; in the interval he studied at Oxford, as Rhodes Scholar, 1921-1923, and as Christopher Welch Scholar, 1923-1925; he acquired the Oxford M. A. and D. Phil., 1925, and the D. Sc., 1941.

Dr. Fulton was married at Oxford to Lucia Pickering Wheatland, of Salem, Massachusetts, 29 September, 1923. A happy domestic life, in a home renowned for its hospitality, continued for more than thirty-six years. Mrs. Fulton survives him.

Further studies in physiology at both of his universities, and in neurological surgery with Harvey Cushing at the Peter Bent Brigham Hospital, were followed by his appointment in 1929, at the early age of thirty, to be Professor of Physiology at Yale, with a one-year leave of absence to complete his work with Sir Charles Sherrington at Oxford, where he was Fellow of Magdalen. For twenty years, 1931-1951, he was Sterling Professor of Physiology, and from 1951 until his death Sterling Professor of the History of Medicine at Yale.

He wrote nearly thirty books, including two major texts, as well as a long list of papers, belonged to more than sixty societies, was honored by the governments of half a dozen countries, and held honorary degrees from nine universities.

Fulton had two careers, as physiologist and as bibliophile and historian. In the first of these he made a world-wide reputation by his research, his teaching, and his authorship. The names of his distinguished pupils form an imposing list. In the second, which for years ran parallel with his scientific career, his most important work was in biography and bibliography. It is not surprising that biography and bibliography should have comprised the chief scholarly interests of one who worked in the Oslerian atmosphere of Oxford, who had the run of Osler's library during the years after Sir William's death when W. W. Francis and his colleagues were compiling the *Bibliotheca Osleriana*, and who was likewise the pupil of Osler's disciple and biographer, Harvey Cushing. A further important influence was that described by Arnold C. Klebs as "the gentle humanistic guidance of Sir Charles Sherrington."

> To them [wrote Klebs in 1940] a Boyle, a Priestley, a Lavoisier, a Fracastoro were not dead historical personages, but very live, stimulating contemporaries, and so it came quite naturally that, in addition to his immense labors which rapidly placed him in the forefront of physiologists and made him the head of a flourishing school of experimenters, he [Fulton] also collected, classified, and analysed the works and other deeds of these men. Bibliography in his hands became an instrument of precision for the investigation

JOHN F. FULTON, 1953

(from a snapshot by Dr. Gregory Zilboorg. Courtesy Historical Library, Yale University School of Medicine)

of the mind of man, especially in his scientific search. By the time he had reached the professorial chair at Yale, just a little before Cushing also drifted there, his collection of books had come to cover the literary productivity of sixteenth to eighteenth century scientists to a degree of fullness that few public libraries could equal. In a restricted but very important field he tried to do what a Gesner and Haller had done for the entire literary output, not in the chaste simplicity of their form, but in the exuberant complexity of bibliographical detail that his friend Geoffrey Keynes had standardized for our age. Collecting facts at the operating table or collecting books at Sotheby's or elsewhere have become a conditioned reflex with him, and the harvest has been very rich.

Servetus, Fracastoro, Lower, Mayow, Boyle—these, and the last most of all, were perhaps the most important of his abiding bibliographical enthusiasms, but there were many others, including Priestley, whose attraction was not based wholly on their contributions to science. Servetus obviously attracted him not only "because of his peculiar position in the history of physiological thought," but also because he was a polyhistor, and because, all else apart, he was "one of that gallant band who endured martyrdom in order to proclaim the dignity of man and the freedom of the human spirit." The medical humanists, and various other doctors of manifold attainment, won his allegiance because in a sense they were his models. His Rosenbach Lectures of 1950, *The Great Medical Bibliographers*, dealt with the men for whom he felt the nearest kinship, so far, at least, as they combined science and booklore. The lectures were dedicated to the memory of Conrad Gesner, Albrecht von Haller and John Shaw Billings. On the final page Fulton summarized the matter thus:

> The bibliographies of most enduring value are those prepared by men who have approached their task with the utilitarian and the humanistic viewpoints in equitable balance. These men, of whom Billings is an excellent example, have left us more than their books, they have given us broad principles which, if followed, will ensure that future bibliographical endeavor, no matter what form it takes, will be dynamic and flexible and a source of continuing usefulness and inspiration.

At the beginning, however, he had quoted J. Christian Bay to the effect that the noble art of describing a useful and beautiful book is its own reward.

There were times when his own scientific and bibliographical aptitudes merged, as in the work on aviation medicine, but as historian and bibliographer he never really exploited to the full his expert knowledge of physiology, a knowledge which no other historian could match. This seems to me all the more a pity because the charm of the medical humanists drew him into realms where his lack of precise philological scholarship was sometimes a serious handicap, a fact of which he was well aware. When this has been said, it should be added that the shortcoming was relative only and that his medical booklore, in the strict sense of the bibliophile, was extensive and detailed—so extensive and so detailed, in fact, that I have known him to embarrass specialists at their own game. His love of books was genuine and lasting, but like Osler before him he was interested in their kernel of "truth," in their authorship, and in their physical aspect; he was too much a child of his own time to plunge with any great relish into the murky waters of outmoded thought. With all the main currents he was nevertheless familiar.

Readings in the History of Physiology is a capital job, an anthology rather than a source book, and the minuscule history called *Physiology*, an adequate introduction, makes one regret that he did not give more time to tracing the development of the branch of medicine he knew best, and to which he himself had contributed

so materially. When he did so, as in his early writing on muscle physiology, he displayed unusual mastery of his materials and special competence in their interpretation.

It is the opinion of some of his admirers that apart from neurophysiology Fulton was at his best as biographer. His life of Harvey Cushing is a remarkable work. It did not, like Cushing's life of Osler, win a Pulitzer Prize, but in many ways it is a better book. It has more shape and definition, more selectivity, more light and shade. It is likely to remain the "standard" life. Unlike many books of this kind, Fulton's biography of his good friend and long-time associate is not in the least stuffy. One is not surprised by what was put in; one is sometimes surprised by what was not left out. From the huge mass of documents which Cushing prepared for his biographer, a choice was made with the most extraordinary detachment. Read with this special point in mind, these pages shed not only a great light on Cushing but more than a glimmer on their author.

It is characteristic, too, that the book is intended primarily for medical students; consequently there is a slightly disproportionate emphasis on Cushing's formative years. As R.A.H. declared in *The Lancet*, Fulton "regarded all workers in the advancement of knowledge—whether scientific, historical, or bibliographical—as belonging to a club of which he was proud to be a member. In it he included the men of the past (hence his devotion to history) as well as the generation to come (hence his active and unstinting support for the young and aspiring)." Hebbel E. Hoff recalls Fulton's Laboratory as "an environment that yielded a maximum of stimulation and a minimum of direction" for graduate students and junior members of staff. In all the variety of John Fulton's work, this element was constant.

He was distinguished not least by his industry, in history as in science, and in sheer volume his work was immense. He took an active and vigorous part in the societies devoted to the history of medicine and of science, here and abroad, as he continued to do, even when he had withdrawn from physiological research and teaching, in scientific societies. Last year his flying visit to Spain was separated by no more than a few days from a subsequent flying visit to Argentina, the first for history, the second for physiology. He had planned to go to England in mid-June, 1960, for the tercentenary celebrations of the Royal Society. To the very end he was full of plans and projects; as Cushing wrote of him twenty years before, he was "full of business as usual." He travelled tirelessly; performed endless literary and editorial labours, both in science and in history; served on committees and commissions; carried on a lively correspondence with half the world, kept a running diary and used up dictaphone discs at a fabulous rate, pouring out words with the speed and regularity of a journalist. He rained gifts and letters, demands and thank-you's, congratulations, reproaches and jokes on his friends, his colleagues, his assistants, his pupils, and his acquaintances in a never-ending torrent. From first to last his vitality was phenomenal. The Reverend Sidney Lovett, officiating at the memorial service in Battell Chapel, spoke of "John's boundless zest for life."

J. F. F. was Churchillian in his energy, his ineffaceable ardour, his interest not only in gastronomy but in the good things of life in general; he was Churchillian, too, in the *empressement* of his words and deeds. But he was far too prodigal of his powers. He did not, as the expression goes, take care of himself. For many years he seemed to picture himself, quite erroneously, as made like Churchill of a metal that time and wear could not easily corrode. Disease undermined his strength at last; but although illness and the passage of years dimmed the early brilliance of his

youth, his amazing energy hardly flagged. Serious attacks of disease he bore with fortitude, and for several years at the end he walked with equanimity on the knife-edge line that marked off life from death; yet on he worked.

His labor sprang largely from his devotion to the great causes of his life; partly, no doubt, from habit; and partly from his need to compensate for the things he could no longer do or had never learned to do. One is tempted to say that he undertook too much. Perhaps he would have done better to restrict his activities, to shorten his lines, to consolidate his gains, to take thought, and to give himself time. That was not the way he was made. Was it not, when all is said, a magnificent battle and a great campaign? Few men can have worked harder. Moreover, despite much hurried and ephemeral work, there remains a splendid legacy of accomplishment.

Even more striking than his industry, and certainly more important, was his constant initiative, his enterprise, his readiness to make a fresh start, in peace or in war, along new lines. National provision for medical research, university provision for the history of medicine and of science—at either end of the gambit things changed, and for the most part improved, because John Fulton could not rest. Indiscreet, incurably busy, sometimes maddeningly diffuse, he nevertheless had the great executive virtue—he got things done. Coupled with this was a certain independence of mind. As an undergraduate he had maintained (almost in the manner of John Hunter) that the surgical approach to endocrine problems was a poor second best; that they would one day yield to some form or other of medical treatment. At sixty he was still capable of swimming upstream, of making way against the current of contemporary opinion.

Sir Arthur MacNalty has written of Fulton: "He was essentially a good man. Virtue went out of him to help others, not only in the study of neurophysiology and of medical history, but also in the perplexities and vicissitudes of life. That is why his students loved and revered him, and why he had countless friends and correspondents on both sides of the Atlantic." This leaves out of account a gay indiscretion which sometimes added to the perplexities, while it eased the vicissitudes, of colleagues and friends.

A propensity for saying what he had on his mind, and still more for setting it down on paper, revealed John Fulton as a forthright liberal, particularly, but by no means exclusively, in the academic realm. (It is not an unexampled paradox that he was at the same time in many respects conservative.) It also revealed him, over and over again, as a man of impulsive good will, a Samaritan who was not too careful to mind his own business. This was one of several ways in which he seemed to me to be perennially youthful and incautious, and he "got away with it" as few others could do. His fundamental attitudes were early established and firmly retained. About many of his personal opinions there was nevertheless a sort of carefree abandon which produced mixed reactions— admiration, laughter, gratitude, annoyance, affection, dismay. He was always setting things right, with frequent good effects and with occasional buzz and bother. I believe that the buzz and bother, occurring rarely, always surprised him. He was not thin-skinned himself, and he did not expect others to be thin-skinned. Anyhow, he forged ahead, with spendthrift energy, and those who suspected that he was "up to something" were usually right; but a more open-hearted Machiavelli than Fulton never plotted good works so assiduously, never got into scrapes so light-heartedly, never displayed such a complete absence of malice, such perfect good will. What always impressed

me most about his generosity was something transcending money, or the giving of books, or even the encouragement which he lavished on young scientists, on scholars and librarians, on all who shared his own preoccupations; it was the gift of time, most precious of commodities to a busy man, expended for others without a second thought. Nothing was too much trouble. And this rare generosity even broke out of the circle of his own duties and his own specific interests. His warmth was constant and unique, his humanity singular in breadth.

Those who knew him will not soon forget his humour. It was pretty broad too. He retailed stories that Rabelais might well have left out. On the other hand he had that engaging characteristic, increasingly uncommon in a managerial, go-getting, sober-sided society, the knack of extracting an easy and barbless humour from everyday difficulties, his own included. This curbed his vanity, sweetened his acerbity when confronted by fools, neutralized sentimentality in himself and others and made all minor troubles minimal. When most exasperating (all scholars are exasperating) he could still laugh. I think he was loved for this as much as for his kindness.

Good taste and good sense governed his references to his own rôle in the story of Harvey Cushing; the importance of this rôle, particularly for the establishment of the great historical library on Cedar Street in New Haven, is perhaps not fully appreciated by medical historians even yet. Cushing's mind was fired and his purpose sustained by the zeal of John Fulton. The library was a threefold enterprise—Cushing, Klebs, and Fulton contributing each his own fine collection—but its true architect was the youngest of the trio, Fulton, whose guiding hand is everywhere apparent. (Fulton's suggestion that the library should be named for Cushing was gently rejected by Arnold Klebs, not solely on his own account.) Attractive likenesses of all three, at their best and most engaging, may be found in the little presentation volume, *The Making of a Library*, composed of a selection of their letters and winningly introduced by Wilmarth Lewis, which was prepared by Madeline Stanton, Elizabeth Thomson, and Whitfield J. Bell, Jr. in time for Fulton's sixtieth birthday, 1 November, 1959.

Cushing and Klebs disappeared from the scene and the fine concept of interlocking library and department was worked out to its conclusion by the survivor, who gave himself to the task with entire devotion. More recently, and again with Fulton as the key figure, the department was reorganized to embrace the history of science, Professor Derek Price joining hands with J. F. F.

Yale's contribution to the history of medicine has been substantial. Greater than anything yet accomplished is the superb potentiality which exists there, a potentiality which John Fulton, more than any other man, planned and created. The wonderful library is a fountain of light unchanging. In this light his name will shine for posterity. As scientist he will be remembered; as bibliographer he will not be forgotten; but as a contributor to the domain of medical history, in which he gave so much encouragement and opportunity to others, he would deserve a lasting name if he had never written a word or delivered a speech, never chaired a committee or framed a resolution. As one of his memorialists has said of him, John Fulton was a life-enhancing force. He was one of those in whom life was so abundant it makes difficult the realization that he has gone.

LLOYD G. STEVENSON

ANNOUNCEMENTS

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE

Thirty-Fourth Annual Meeting: Chicago, Ill., May 18-20, 1961

The Thirty-fourth annual meeting of the American Association for the History of Medicine will be held in Chicago, Ill., May 18-20, 1961. Dr. Ilza Veith is chairman of the Committee for Local Arrangements.

Osler Medal Committee

The following members have been appointed to serve on the Osler Medal Committee for 1960-61: Walton B. McDaniel, 2d, Philadelphia, Pa., *Chairman;* Sanford V. Larkey, Baltimore, Md.; Ralph H. Major, Kansas City, Kan.

NATIONAL NEWS

American Academy of the History of Dentistry

At its annual meeting the American Academy of the History of Dentistry elected the following officers for 1961: Harry B. McCarthy, president; James M. Courtney, president-elect; P. H. Foley, vice-president; Milton B. Asbell, secretary-treasurer; George B. Denton, editor.

Philadelphia

The Osler Society at Temple University Medical Center sponsored an address by Dr. Francis G. Grant, December 7, 1960, on "The Role of the Osler Society in Medical Education."

PROGRAMS OF MEETINGS

The Johns Hopkins Medical History Club

February 6, 1961: Papers by members of the Institute of the History of Medicine: Edwin Clarke, "Apoplexy in the Hippocratic Writings"; Gerald Gruman, "Luigi Cornaro and His Regimen"; Charles Rosenberg, "Charles B. Davenport and the Beginnings of Human Genetics"; Jerry Stannard, "The Plant Called 'Moly'".

NEWS FROM ABROAD

Korea

According to the *Bulletin of the History of Dentistry* (August 1960), a Korean Academy of the History of Dentistry has been organized with the following officers: Lee Han Soo, president; Choi Jin Hwan, secretary and editor; Kim Doo Jong and Han Dong Chan, advisers. A new *Journal of the Korean Academy of the History of Dentistry* is to appear.

BOOK REVIEWS

ANDRÉ MAUROIS. *The Life of Sir Alexander Fleming*, Discoverer of Penicillin. Translated from the French by Gerard Hopkins. New York: E. P. Dutton and Co., Inc., 1959. 293 pp. Ill. $5.00.

When a master of popular political and literary biography turns to the world of science for an appealing subject, the reading public is reminded of the basic humane qualities of the scientist. Lady Amalia Fleming, in her choice of a biographer for her eminent husband, could not have chosen one more qualified for this than André Maurois. I first read Maurois in the pages of his gay biography of Disraeli and later in his accounts of Victorian England and the elegance of the Edwardian era, written much under the influence of Lytton Strachey. I wondered whether Maurois would approach Fleming in the same way, and do so successfully. Maurois has changed his method but, happily, not his style; the result, an eminently readable and satisfying biography.

To prepare for his writing Maurois spent months in the Pasteur Institute of Paris familiarizing himself with the life and language of bacteriology, to which Fleming devoted his career. Living contact with the day to day life of a scientist is vital to authentic scientific biography, and Maurois seems to have touched the essence of medical research. The happy years that Fleming devoted to research and teaching, all in St. Mary's Hospital and Medical School, London, are presented with interesting sidelights. But Maurois has caught the inspiration that brought Fleming renown and ultimately the Nobel prize, and this is the key to enjoyment of the book.

In 1906 the young, reserved Scot was thrust into the ferment of investigative bacteriology that was tended constantly by the Director of the Inoculation Department, that "gigantic brain concentrated on the world of bacteria," Sir Almroth Wright. No two men in Britain could have been more dissimilar, yet they worked together for many years in the "lab" with near complete harmony. (The death of Wright in 1947 brought one of the great sorrows of Fleming's life.) Wright's studies were concentrated primarily on opsonic indices and on vaccines, which he pursued night and day. Fleming's observations and records dating from 1922 led to penicillin and world renown.

From his formative years one purpose emerged for Fleming—the conquest of infectious diseases. This goal was not one perceived dimly or one chosen with complete objectivity. It came from the experience of great sickness through contagion, studied in London's hospitals, and personal experience of the tragedy of epidemic disease in World War I. Through steady work and the faithful recording of chance and "incidental" observations the new world of antibiotics was disclosed in the 1920's and 1930's. For years these findings were limited to and applied in the research laboratories only. The development of penicillin for the treatment of human diseases came in the early 1940's with the pressure of World War II, and Fleming had the silent satisfaction of success in his life's ambition: mass treatment and prevention of many of the world's dreaded infectious diseases.

The role of the wartime team of Fleming, Florey and Chain is emphasized in this achievement.

After the perfection of penicillin the canvas of Fleming's life broadened rapidly. The biographer, however, stays abreast of his subject and despite the honors and acclaim heaped upon Sir Alexander, keeps the reader close to the core of reserve and simplicity that was the essence of Alexander Fleming. His late years, saddened by the death of his wife and companion of thirty-four years, Lady Sareen, were made happy in his marriage to his esteemed former pupil Amalia Voureka of Athens, Lady Amalia Fleming. He died in 1955 as he had lived, simply and quietly, and was buried in the crypt of St. Paul's.

Here, now, is the excellent biography of a modest and humble man whose scientific heirs work in all quarters of the globe and to whose quiet studies countless millions may owe their lives and health.

ROBERT J. FAULCONER

ROBERT H. DURHAM. *Encyclopedia of Medical Syndromes.* New York: Paul B. Hoeber, Inc., Medical Division of Harper & Brothers, 1960, xiv + 628 pp. $13.50.

This work is scholarly, accurate, informative, and interesting. Dr. Durham points out that there is no universal agreement on the correct pronunciation of the word syndrome nor on its correct definition. The word syndrome, according to Dr. Durham, was introduced into the English language in 1541, when it appeared in Copland's translation of Galen. It is obviously the Greek word *συνδρομή*, meaning a running together or a concourse, referring here to a group of findings occurring together. (Incidentally, the Greek word is a three syllable word and pronounced as such, the mode that prevailed in my student days and the pronunciation that is listed as first choice in many dictionaries of the English language.)

Most syndromes are eponymic and carry the names of the individual or individuals who first described them or wrote the outstanding description of them. The use of medical eponyms has often been attacked, but they still retain their popularity. Many physicians champion their use because they feel that the pioneers who first described certain syndromes should be remembered by posterity; they point out how much simpler it is to refer to a syndrome which carries a proper name than to employ a cumbersome term which attempts to include the symptoms and signs present.

In employing the term syndrome, the question invariably arises what is a syndrome, and what is a disease? Durham writes, "In general, a syndrome evokes more interest and is more challenging than a disease because its relationships are more obscure and its etiology is less apparent. If, subsequently, a specific etiologic factor does become manifest, the condition should then be re-classified as a disease."

Durham's book contains some one thousand entries, in alphabetical order, but it is much more than a list of syndromes or even a dictionary of them. Each syndrome is described, its synonyms noted together with a brief history of, and pertinent references in, the literature. A work of similar scope and thoroughness

does not exist, to my knowledge, in the English language. It should be of absorbing interest to both the clinician and the medical historian. Every physician or layman contributing to medical literature or to the history of medicine should have it at his elbow, or at least within easy access.

RALPH H. MAJOR

MARVIN K. OPLER (Editor). *Culture and Mental Health*; Cross Cultural Studies. New York: The Macmillan Company, 1959, xxi + 533 pp., $8.75.

Marvin K. Opler, the active co-editor of the *International Journal of Social Psychiatry*, professor of social psychiatry and of sociology at the University of Buffalo, has added another important contribution to the literature of this new field of psychiatry. This collection of papers illustrates the basic problems and present status of social psychiatry in a vivid and colorful way. To the medical historian, it is of importance that this volume was designed as a contribution to the Mental Health Year of 1960, obviously an expression of the growing importance of social psychiatry among present-day behavioral sciences.

Social psychiatry still reflects its recent origin and the editor of this volume attempts in the introductory chapter to define the present philosophy of the field, emphasizing the importance of the cultural and social background for the understanding of individual personality disorders, the value of studying cultural patterns "in loco," ultimately the improvement of world mental health with a wider acceptance of social psychiatric principles. Medical history contributes to a better evaluation of socio-cultural systems in their historical context.

Certainly, some formulations, e. g. "mental disorders were also processes which had changed markedly in human history" (p. 10), could have been expanded so as to carry more weight; but in the limits of the present, the volume presents ample evidence of the variety of expression of mental phenomena in different cultures, offering interesting data for a discussion of the relation between historically primitive and culturally primitive behavior.

Some of the formulations contained in the introduction reflect the incertitudes of this initial stage of social psychiatry. They are, however, always stimulating, and the volume clearly reflects the widening of psychiatric perspectives before the urgent social and political problems brought about by the post-war re-assessment of many countries, especially in the Afro-Asian areas.

The subdivision of the material and the variety of methodological principles (from anecdotic reports to the most elaborated psychological techniques) also point to the newness of the field. While some of the chapters, such as those by A. I. Hallowell, M. K. Opler, B. Dai, T. Gladwin, and S. B. Sarason are based on previously published material, others, such as J. Fried: "Acculturation and Mental Health among Indian Migrants in Peru," G. De Vos and H. Miner: "Oasis and Casbah—A Study in Acculturative Stress," and H. B. M. Murphy: "Culture and Mental Disorder in Singapore," present new and stimulating views. On the whole, both sections on Asian and African contrasts represent well the impact on individual personality of the tremendous problems of adjustment to Western influence which

face millions of people and which find expression collectively in political disorders and social restlessness, and individually in mental disorders.

One would welcome more detailed information regarding the individual development in chapter 3 (A. F. C. Wallace), more clinical data in chapter 4 (M. K. Opler), and a more psychiatrically geared presentation of chapter 11 (M. E. Opler), but these are minor weaknesses. The reader receives the impression of a common theoretical basis underlying the philosophy of all the authors represented in the book. M. K. Opler's interesting chapter on "Cultural Differences in Mental Disorders: An Italian and Irish Contrast in the Schizophrenias" emphasizes a relativistic concept of mental health and normality, a basic statement supported by other authors in the book, e.g. by H. B. M. Murphy (p. 314), and which is, of course, of definite interest to medical historians.

The last part touches on many points closer to the American scene. Particularly significant are the studies by A. Kardiner ("Explorations in Negro Personality") for the depth of his formulation, by E. D. Wittkower and J. Fried ("Some Problems of Transcultural Psychiatry") for their review of the basic issues of social psychiatry, and by M. Mead ("Mental Health in World Perspective") for her agile and panoramic presentation of international collaboration in mental health projects. These last two chapters particularly portray the changing concept of the role of the psychiatrist in the present-day international scene. Many cultures of the world are still witnessing the coexistent influence of medicine men and psychiatrists, with the latter gradually tending to prevail. Perhaps the next development will be represented by the rise of indigenous psychiatrists and behavioral scientists in underdeveloped countries. The impression received by the reader of this volume is that it indirectly aims at illustrating the psychoterapeutic traditions of primitive cultures in the hope that they will be successfully integrated into future psychiatric work in those cultures.

GEORGE MORA

JOHN B. BLAKE. *Public Health in the Town of Boston, 1630-1822.* Cambridge: Harvard University Press, 1959. x + 278 pp. Ill. $6.50.

This book is devoted to public health problems in Boston, Massachusetts from the Colonial days, starting in 1630, to the Post-Revolutionary period up to 1822—when Boston's local government changed from a town to a city. The author has compiled a chronicle, accompanied by some analysis, of the organized planned effort to deal with public health problems in this community. Since this is the scope of the book, it describes and discusses health conditions and health problems largely as they are related to the efforts, procedures, schemes, and programs which were developed to deal with them. The social, economic, religious, medical, and political setting in which these events took place is described only in relation to the specific health efforts that are delineated.

The Puritan character of the religious origin of this Colony and its port activities make for a distinctive and colorful story which is carefully documented by the author with interesting detail from original sources. His analysis provides insight

into the changes in public reaction to epidemics of smallpox and yellow fever, and in the efforts to control them, from the 17th Century when the early Puritan influence inhibited any action other than prayer and appeals for reformation (since epidemics were thought to come from God), to the beginning of the 19th Century, when boards of health were set up, supported with necessary legislative powers to underpin sanitary measures aimed at controlling yellow fever epidemics. The transition from the simple appeal for voluntary effort and cooperation to the provision of legislative power and tax funds is also described. These changes followed the long period when the selectmen were expected to control epidemics and institute sanitary measures but had insufficient power and authority. The great excitement caused by the epidemics of these times can be illustrated by the fact that in 1721, during the smallpox epidemic, the death rate was 103 per thousand—a virtual decimation of the population, with 1,102 out of 10,700 dying in that year.

Interesting detail is provided about the inoculation controversy, the development and adoption of vaccination, other aspects of smallpox control, and also the efforts to control yellow fever. As physicians ". . . had become a recognized and respected professional group . . . ," they were officially consulted during the course of the 18th Century. This was followed by the first employment of a physician for public health activity, the appointment of Dr. Joseph Whipple as quarantine physician in 1779. Within the next few years, other such appointments were made among the rising leaders of the profession in Boston. The description of the inoculation controversy of 1772 is an interesting example of the way in which public policy and program were subject not only to the religious attitudes of the times, but also to the medical theories of the time. Though this particular controversy was mainly carried out in a religious context, the author suggests that there was really a sharp division of medical opinion. One wishes that the background of this interpretation had been explored further.

Other illustrations of provocative events which, in this reviewer's opinion, it would be desirable to analyze and discuss in greater detail (perhaps this will be done at some future date by the author) are the fascinating stories of the public demonstration conducted by Dr. Benjamin Waterhouse under the auspices of the Board of Health. The effectiveness of smallpox vaccination was demonstrated through the vaccination of 19 volunteers who were then subjected to variolation and contact with infected cases. Despite this clear-cut, successful demonstration, however, there was a very poor response on the part of the general population. In the light of current disappointing cooperation in polio vaccination and the controversy regarding fluoridation of community water supplies, one has a quickened interest in learning more about the basic forces involved in this incident. Another fascinating story mentioned briefly by the author occurred in 1819 during the yellow fever epidemic when a ship, *The Ten Brothers*, was quarantined, then scuttled by the Board of Health, not once, but three times. Because the epidemic continued and the public clamored for action, the ship was raised and resunk twice again, each time a little further out to sea.

The book contains a detailed bibliography, a very useful discussion—"A Note on Sources," and two appendices providing interesting statistics on mortality and also on the inoculation activities.

The complexity of today's public health problems has highlighted the need for deep insight into the factors and processes involved in producing effective organized public health effort. There is increasing recognition, therefore, of the need for greater documentation and better understanding of the historical development of public health activities. This book, within the confines of its scope, helps to fill that need.

CECIL G. SHEPS

Franz Hermann Franken. *Das Leben grosser Musiker im Spiegel der Medisin: Schubert, Chopin, Mendelssohn.* Stuttgart, Germany: Ferdinand Enke Verlag, 1959. 100 pp., DM. 12.00.

The intriguing question as to which elements in the personality as well as in the physical life of a creative artist have some bearing on his productive work is approached by the author by analyzing the medical data in the lives of 3 great composers, Schubert, Chopin, and Mendelssohn, who died at an early age. The author abstains from constructing theories and succeeds in objectively relating the medical happenings of his subjects with their life story in a clearly written and, even for laymen, understandable manner.

Franz Schubert enjoyed good health in his first 20 years. He received early musical instruction first from his father, later from a choir director, and then suffered through 3 years as apprentice schoolteacher. During this time he had already composed many of his major works. Finally he devoted himself entirely to music, giving up financial security for the sake of leading a happy and productive life among a group of congenial friends who helped and stimulated each other unselfishly. But from that time on his letters and those of others start mentioning various physical complaints which continued through his remaining years: rash of the scalp (alopecia), tantalizing headaches and dizziness, temporary pains in his arm preventing him from piano playing, and severe depressions interrupted by short periods of optimism. Although no specific diagnosis is ever mentioned, it seems quite clear from some remarks and from the selection of doctors with reputation in the field of venereal diseases that his chronic illness was syphilis, a widely spread disease at that time. Contrary to common belief, Schubert was not shy toward women and must have been frequently exposed to infection. His aversion to marriage was due less to lack of opportunity than to his suffering from the stigma of his illness, as well as to his financial misery and his feeling of obligation to his art. However, his untimely death at a time when wider recognition and even financial success had just started, did not result from his chronic disease but from typhoid fever, or "nerve fever" as it was commonly called and entered on his death certificate. Two exhumations, 38 and 60 years after his death, did not produce any evidence of luetic bone changes and were mostly concerned with anthropometric examinations.

Frédéric Chopin started composing and performing in public before he was 8 years old and travelled extensively through Europe, appearing successfully in many capitals. His letters and those of friends describe various occasional illnesses, but

it appears that all these reports only describe insignificant acute episodes common to the average young person. He was, however, closely exposed to a tubercular younger sister who, after prolonged illness, succumbed to her pulmonary disease; but Frédéric went through a probable primary infection without clinical manifestation. His life, especially in Paris, where society and the musical world accepted him with love and enthusiasm, was full of hard work with good financial reward. His well known love for, and friendship with, the famous writer George Sand lasted about 10 years, perhaps the most important phase of his life, until they parted in anger. His voyage with George Sand and her children to the island of Mallorca, supposed to help his convalescence from a respiratory illness, brought about his first hemoptoe. In spite of progressing tuberculosis he continued teaching, travelling, gave concerts in England, and composed, until he died of what appears to have been the clinical picture of right heart failure. The autopsy report, unfortunately later lost in a fire, also is said to have emphasized marked changes of his heart.

Although Felix Mendelssohn-Bartholdy, too, started his musical life very young and died before having reached the end of his fourth decade, he differed in several respects from Schubert and Chopin: he was born into a family of cultural significance and financial security, and music was the best, but not the only, manifestation of his many talents. Successful travels through Europe as a conductor, pianist, and composer, appointments to most important positions as musical director in Berlin and Leipzig, characterized the life of the man to whom later generations mainly owe the re-discovery of J. S. Bach. Aside from a severe traumatic arthropathy, ear infections, measles in adult life, and a mild case of cholera, his medical history was not interesting. But, at the age of 31 years, Mendelssohn had a typical cerebro-vascular accident followed by repeated periods of headaches and fatigue. Seven years later he had a fatal cerebral hemorrhage. The similarity of the mode of death at a rather early age of several members of his family, grandfather, father, and sister, seems to point toward a familial cause like intracranial aneurysm, rather than any of the hypertensive conditions or tumors.

The causes incapacitating these three composers were different, but the way they all continued their creative life for a long time until their strength failed completely, was the same, which proves—as with Mozart and Beethoven—that physical suffering does not necessarily impair the work of a genius.

MAX LANDSBERGER

THE BULLETIN RECENTLY RECEIVED *

J. Menzies Campbell. "Children's Books." Reprinted from *The Dental Magazine and Oral Topics*, September, 1960.

A. E. Carter. *The Idea of Decadence in French Literature, 1830-1900.* University of Toronto Press, 1958. ix + 154 pp., $4.95.

James Gray. *Education for Nursing,* A History of the University of Minnesota School. Minneapolis: University of Minnesota Press, 1960. 239 pp., Ill., $5.00.

Emiliano Hernandez Benito. *La obra de López de León.* Salamanca, 1960, 31 pp., Ill. (Estudios de Historia de la Medicina Española, Universidad de Salamanca, nueva serie, Tomo II, Núm. 4.)

Karolinska Institutet, The Royal Medical School in Stockholm. Stockholm, Göteborg, Uppsala: Almqvist & Wiksell, 1960. 102 pp., Ill.

Stanford E. Lehmberg. *Sir Thomas Elyot, Tudor Humanist.* Austin: University of Texas Press, 1960. xv + 218 pp., Ill., $4.75.

Heneage Ogilvie. *No Miracles Among Friends.* London: Max Parrish; (American agent: Charles C Thomas, Springfield, Ill.) 1960. 174 pp., $4.50.

Jose F. Prieto Aguirre. *Vida y obra de Andrés de León.* Salamanca, 1960, 30 pp., Ill. (Estudios de Historia de la Medicina Española, Universidad de Salamanca, nueva serie, Tomo II, Núm. 5.)

* The *Bulletin* reserves freedom of decision as to the publications to be listed in this section. Items received, other than those assigned for review, are ultimately incorporated into the collection of the Institute of the History of Medicine.

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